RAILROAD GAZETTE

FRIDAY, FEBRUARY 24, 1899

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# Contributions.

### Steel Boiler Flues.

Norfolk and Western Railway Co.
Roanoke, Va., Feb. 11, 1899.

To the Editor of the Railroad Gazette:

Noticing a letter dated Jan. 30 from Prof. Goss about the use of steel boiler flues in the navy. [Railroad Gazette Feb. 10, p. 97.] There is no doubt about the excellent quality of the material used, but there is one point in connection with the practical use of steel boiler flues in railroad service that absolutely differs from marine service. I believe I am correct in stating that the flues for marine boilers are never welded, and that the regulations do not allow of this in the navy or in the merchant service. There are very few railroad companies who do not now weld new ends on their flues, which operation can be performed at a small fraction of the expense of buying new flues, which I believe would be necessary if steel flues were specified and used.

Flues in locomotive boilers have to be renewed according to the quality of water used, very much more frequently than in marine practice—both on account of accumulation of scale, and on account of the ends becoming abraded by the sand-blast action of the cinders, also on account of the frequent rolling and calking, which is necessary to keep them tight where hard water is used. Consequently, if the entire flues had to be renewed each time they were removed, the expense would be largely increased. If the steel manufacturers can show that steel flues can be welded as readily as soft knobbled iron flues, and that they will not become hard and brittle by long use, there is a better chance of steel flues being taken up in locomotive practice.

R. P. C. SANDERSON.

### The Nicaragua Canal.

Washington, Feb. 20, 1899.

To the Editor of the Railroad Gazette:

For now five years you have effectively displayed the danger signal whenever the Nicaragua Canal matter has seriously been considered by Congress, but the sentiment of Congress has steadily approached the insanity point. You long ago urged sending a competent board of engineers to examine and report. This was done—with what result is well known. Then, another board was provided with a larger sum of money and more time, and it also was dispatched to Nicaragua. Its report is not prepared, and is not likely to be. It would show marked and radical differences and disagreements in the board itself as to plans and costs, and yet the project is blindly driven forward. As to differences in the board itself. One could hardly expect the conservative engineer to agree with the enthusiastic professor whose ideas of the usefulness of the canal were expressed in his remark before the Committee last June: "Professor Haupt. In answering that question, Mr. Chairman, I will, of course, have to qualify my remarks as to a reasonable expenditure, and to explain that after my investigations as to the economies that would be effected by this canal, the question of cost does not carry very much weight in my mind, even if it were $200,000,000. Therefore, in answering your question responsively, I should say that I do not see any special difficulty in the construction of a practicable high level line."

The extraordinary difference between his estimate of $90,000,000 and the estimate of the engineer of $140,000,000, both guessed at before the Committee last June, and $123,000,000 and $148,000,000 in the preliminary report, shows that either the data are not sufficient yet for a reasonable decision upon costs, or that there is a radical divergence in the Board about plans or prices, or both.

And what does Congress know about the matter? With all the survey and examining and collecting and collating of data, with all the study of the subject by many men, competent and incompetent, during the last half century, after the expenditure of hundreds of thousands of dollars, the views upon the general and special features, and even vital features, are still at variance. The serious obstacles have not been removed, the essential problems have not been solved, the investigations have only brought to light new difficulties. The investigators are always on the horns of some serious dilemma, always between the devil and the deep sea, and yet the impetuosity and the momentum of the sentiment pervading Congress is driving on to certain destruction.

In the name of all that is reasonable and prudent, let us wait until we know where and how we will fetch up before we move forward further. Let Congress, instead of appropriating $115,000,000, which may be doubled or trebled before the work is completed, authorize a Commission of competent experts to examine not only the Nicaragua conditions, but those at Panama, from all points of view, physical, commercial, military and political, and report its findings to the next Congress.

OBSERVER.

### The M. C. B. Coupler.

To the Editor of the Railroad Gazette:

I have read with great interest the editorial article on the M. C. B. coupler in your issue of Feb. 3. It is certainly very just. Mr. Hickey's opinions may have been formed from his experience with the kind of couplers that his road has been making. I send you a statement of this equipment, which I have been able to procure from the records of the Interstate Commerce Commission at Washington. Of course your readers will all know that the American, the Janney and the Dowling are M. C. B. couplers, and that the Sams is not. Your readers are also aware that the law does not compel railroads to adopt any particular coupler; it only requires that cars shall couple automatically. In consideration of the great interest in England at this moment in the matter of automatic couplers, it would be unfortunate if any misunderstanding of the real situation of the coupler in this country should go abroad.

A. B.

Freight Cars with Couplers on the Rio Grande Western.

| | Owned. | Equipped. | |
|---|---|---|---|
| 1893.. | 652 | 652 | American, 234; Janney, 94; Dowling, 324. |
| 1894.. | 670 | 670 | American, 239; Janney. 167; Dowling, 264. |
| 1895.. | 651 | 651 | American, 230; Janney, 86; Dowling, 271; Sams, 64. |
| 1896.. | 653 | 440 | Sams, 173; Janney, 67; Dowling, 200. |
| 1897.. | 832 | 641 | Sams, 430; Dowling, 156; Janney, 55. |
| 1898.. | 877 | 667 | Sams, 495; Janney, 47; Dowling, 125. |

To the Editor of the Railroad Gazette:

Records show that the vertical plane coupler has been a great saving to roads in a financial standpoint over the old link and pin coupler. Railroad companies have saved thousands of dollars every day in the year through the use of the automatic coupler. Before the automatic coupler was introduced, the average cost of maintenance amounted from $2.50 to $3.50 per car a year, not considering the loss of time in making up trains in the yards, and recoupling a train after breaking in two, and the saving of life and limb. You need only to look at the Interstate Commerce Reports to learn of the loss of life and limb during the reign of the link and pin coupler.

Mr. Hickey says that "experience with it has been deeply disappointing." That may be the case with some roads which are using some inferior coupler, of which there are several in the market. Take a road that is not looking after anything but the best, and they will tell you that the automatic coupler is not only a great saving in dollars and cents, but is a godsend. If a circular was issued for the purpose of abandoning the automatic coupler, there would be such a howl among the railroad men that the roads would be tied up for want of men to operate them.

Regarding the increase of the proportions of the M. C. B. coupler to conform to the increased weight of cars, the gentleman need not give himself any uneasiness in this line, for there is a coupler now perfected which will meet all the requirements of the heavy cars now being built, and which will couple readily with the M. C. B. coupler.

BUCKEYE.

### Per Diem Car Service.

At the February meeting of the New York Railroad Club, Mr. J. M. Daly, of the Illinois Central, presented a paper on the use of the per diem basis in settling for the hire of freight cars interchanged between railroads. The main part of this address was given in the Railroad Gazete of Feb. 17, p. 117. Among those present at the meeting was Mr. W. E. Beecham, Car Accountant of the Chicago, Milwaukee & St. Paul, which is one of the roads belonging to the Association which is now settling car accounts on the per diem basis; and in the discussion of the paper he gave some facts, supplementing the information given by Mr. Daly.

In answer to questions, Mr. Beecham said that his road would be willing to join with any road in the establishment of Mr. Daly's mixed mileage and per diem scheme. This scheme is no less equitable than straight per diem would be. In establishing the new method Mr. Beecham and Mr. Daly jointly instructed their local agents at junction points to work for the promotion of the mutual interests of the companies, and the experience of the past six months has proved the correctness of the theory that this is better than for each to constantly look at the immediate effect of any act on his own interests only. In other words, the agent of one road treats his neighbor, the agent of the other company, with full confidence, and this policy is reciprocal. If, in any case, either agent finds that a transaction has resulted to his disadvantage, compensation is found in the fact that the general results of the constant operation of the per diem principle far outweigh, in benefit, any temporary disadvantage.

Mr. Daly, replying to questions about the disputes constantly arising everywhere as to just when a car is delivered by one road to another, stated that, whereas there was formerly considerable loose practice in this matter, the company had now adopted precise rules at all junctions. When a car is placed on a connecting track, has been inspected and found in good condition, and the billing of the contents has been delivered, the car has been delivered, according to the regulations.

Mr. Daly keeps all his refrigerator cars in a record by themselves. Except in this particular, inequalities resulting from differences in the size of cars, and other similar causes, will continue, but they will be no worse than they have been heretofore.

The Illinois Central, being a long road and being a car lender, would find more profit in a straight per diem plan than in the compromise plan now used, but a bird in hand is worth a whole flock not yet hatched; it has been possible to get the compromise plan adopted on five large roads; but the straight per diem has not yet had that good fortune.

Thus far exceptions to the per diem regulation have been needed in only two cases. At one town, the Burlington, Cedar Rapids & Northern moves cars from certain industries to the Illinois Central tracks; and to accommodate the shippers of this freight, Illinois Central refrigerators are stored at the starting point and the company waives its right to collect car service from the B., C. R. & N. on those cars. At Dubuque a similar agreement is in force concerning furniture cars. At both places the agents of the two roads keep a constant watch of these cars, and at the end of the month agree as to what allowance shall be made, and the general car office does not have to take action in the matter.

Where large numbers of cars are sent away from home to wait for freight, the per diem regulation can readily be suspended. If a road east of Chicago desires to send 50 cars into Iowa to wait for corn, the Illinois Central will readily take the cars if the per diem charge is waived. As, however, the agreement waiving the charge is made by a single company, it is necessary that the cars shall all belong to that company. If it were to send a miscellaneous collection of cars belonging to its New England connections the Illinois Central might find that the agreement waiving the charge would not hold water. If the Illinois Central should call on an eastern road for cars to send to Iowa, the eastern road can feel sure that the call will not be made too early, because the I. C. will be on the alert not to pay out for these cars more than it is obliged to.

### Masonry or Wooden Dry Docks.

Last week, page 120, we printed some notes from the papers read by Commodore Endicott and Prof. Cathcart at a special meeting of the American Society of Civil Engineers, which was called for the purpose of discussing the question of building masonry or timber dry docks for the uses of the United States Government. The discussion of these papers was long and interesting, continuing till 11:30 p. m., but it was all on one side. The timber dry dock found no champion, or at least none who had the courage to speak.

Mr. R. G. Packard, M. Am. Soc. C. E., who has had much to do with the Brooklyn dry dock, spoke briefly. He pointed out that the comparisons made had been between the modern timber dry dock and the ancient masonry dry dock. He thought that a concrete dock made in accordance with the improved practice of to-day would be a more satisfactory structure than even the old masonry dock, and of course much more satisfactory than a timber dock.

Another suggestion by Mr. Packard was that it

would be interesting to have a record showing the number of days that the docks had been ready for use and the cost of repairs per unit of length and per unit of draught. In other words, it would be useful to know what it has cost the Government to do its docking in each of these docks.

Mr. P. C. Asserson, Civil Engineer U. S. Navy, M. Am. Soc. C. E., spoke at considerable length. He described in considerable detail work that he had done in repairing various dry docks. In the timber dock No. 2, at Brooklyn, it was found that in docking a ship the dock will spread on both sides, and it spreads as much as four or five inches. It is only a question how long the timbers will bear this action. He regards this dock as thoroughly unsafe, particularly if a ship should have much list. "If you should at any time get a ship into that dock with more weight on one side than she has on the other, the result would be very bad."

He gave some particulars of the destruction of the timber work in the Norfolk dry dock by the teredo. While The Texas was in the dock receiving her armor, say nine or ten months, the teredo completely riddled and demolished the outer sill and the surface planking of the abutments. The sill was completely destroyed from high water mark to within a foot of the bottom of the sill, below which it was covered with mud.

Mr. John Kennedy, Chief Engineer of the Harbor Commissioners of Montreal, M. Am. Soc. C. E., spoke at some length. Some notes from his remarks follow:

I have examined all the docks from Halifax to Norfolk lately, including those at Kingston and Levis, opposite Quebec, and it seems to me that both private and public docks made of timber are, as a whole, a failure. They have shown weakness in all cases, and rapid decay. For instance, the Portland dock, which was built about 1869, has not been kept up, has wholly gone rotten—destroyed, with possibly the exception of the very bottom. The three private docks at the Erie Basin, Brooklyn, have been renewed almost entirely. The dry dock at Cramp's is failing very badly. The sides are bulging in at different places, especially toward the abutments, and the altars have been stove in by the shoring at different places. You have heard about the League Island dock. I can emphasize all that has been said about that. It looks very bad. I saw it three or four weeks ago, with a warship in it, and the abutments were shored up at the time to keep it from tumbling in while the ship was docked. The same is true on the Lakes; the universal record of the wooden docks is that they are failing rapidly and show signs of weakness.

Any comparison of the cost of docks built some sixty odd years ago with docks built to-day is out of the question. All the methods of working stone, and the quality of cement that we have now, make a comparison out of the question. A comparison could only be made in cases where there are tenders for the construction of a modern dock.

As to the question between concrete and stone, that has hardly received the attention it might. Cement making has been revolutionized altogether within the last ten years; the cement made now is of a character which was unobtainable ten or fifteen years ago, and it is cheaper and immensely better than it was, and the tendency, especially in England, is to make structures almost wholly of concrete. The new dry dock at Glasgow is wholly of concrete, except possibly the quoins, which may be of granite, but the altars are all of concrete. The Halifax dock, which in some respects is a very instructive example in concrete building, shows that it was built some ten years or so ago—I have forgotten the exact date, but it was a long time in building. It was built by a private company, and some of the concrete was very bad and has failed altogether. Some of the concrete was very good, and is standing very well. The whole entrance was of good concrete, and is standing very well. In that respect it is a very instructive example, as showing just how good concrete and how bad concrete stand under precisely the same conditions. Where it is good it has stood perfectly well—altars and everything. Where it is bad, of course it has failed, and has been renewed in blue brick. Altogether, I think the concrete, the later concrete, has shown that it is very well worthy of use, and the cost of it is so much less that it justifies its use.

Mr. James Ritchie, M. Am. Soc. C. E., spoke very briefly of the dock which he lately built for the Cleveland Ship Building Co., which was described in the Railroad Gazette of Feb. 11, 1898. This dry dock was built of wood, but against his judgment. It is a large dock, 560 ft. long and 96 ft. wide on top, but it is comparatively shallow, having only 17 ft. on the sills. For a dock of great depth, or where the first cost is not the governing matter, he would use masonry.

## The McCord Spring Dampener.

The purpose of the McCord spring dampener is to substitute coil springs for elliptic springs. The coil spring has a short, quick vibration; whereas, the elliptic spring has a slow and easy movement. The former quality of the coil spring has made it unfit for service under engine tenders and stock and passenger cars, in fact many mechanical men have doubted the wisdom of using it even under ordinary freight equipment. But the greater cost of the elliptic has prevented its use for freight cars.

The "dampener" now brought forward is very simple. In the top of the ordinary coil spring a single sleeve is inserted; in the bottom two half sleeves, A and B, Fig. 1, project up into the sleeve, as shown. It will be noticed that the half sleeves, instead of being flat on the bottom, are rounded and have their bearing near the centre. The spring rests on the flanges at the outer edge. This tends to spread the sleeves A and B, making a close frictional contact between the sleeve above and the half sleeves below. When the spring vibrates this friction controls the vibration, reducing it so that it does not exceed the vibration of an ordinary elliptical spring. In other words, the spring, by means of these rocking levers, produces a friction to govern its own motion.

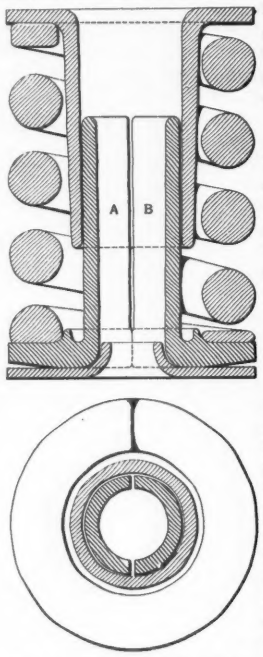


Fig. 1.—The McCord Spring Dampener.

The diagram, Fig. 2, shows from a test the vibrations of a coil spring, and Fig. 3 gives the result of a test made on the same coil spring with the McCord dampener. Fig. 4 gives a record for an elliptic spring, tested under similar conditions as the coil spring. It will be observed from a comparison of Figs. 3 and 4 that the device produces practically the same curve for both the coil and the elliptic springs. These diagrams were obtained by attaching a revolving drum to the standard of a testing machine and attaching a pencil to the beam. In making these tests it was shown that the dampener did not change the capacity of the springs.

The best test of the device, however, has been in service trials. These have been made by removing the elliptic springs from under an engine tender and substituting the four clusters of coil springs, with the dampeners inserted. In some cases the engine crews have said that it made the tender ride more easily. In these trials malleable iron has been used in both the sleeves and the levers, and in six months' continuous service no appreciable wear has occurred, and it is believed that even with malleable iron the life of the device will equal that of the coil springs.

Another advantage expected from the device besides a reduction in first cost for springs is reduced cost in spring maintenance, as the life of the coil spring is greater than that of the elliptic, and the expensive repairs of the elliptics may thus be avoided. The device is made by McCord & Company of Chicago and New York.

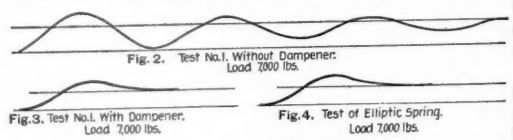


Fig. 2. Test No.1. Without Dampener. Load 7,000 lbs.


Fig.3. Test No.1. With Dampener. Load 7,000 lbs.

Fig.4. Test of Elliptic Spring. Load 7,000 lbs.

Tests of Spiral and Elliptic Springs.

## Inspection of and Repairs to Automatic Block Signals.

The problem of maintaining automatic block signals is an important one. The use of such signals is becoming daily more common. The question of distribution of labor, so as to obtain the best results, is largely governed by local conditions, and is often hard to decide. Especially is this the case when there is a limited number of maintaining men to be drawn from. Is it best to give one man charge of, and hold him responsible for, a large territory, furnishing him with inferior help to make the necessary battery renewals and do the rougher part of the work, or should we shorten the territory, bring up the standard of the men (consequently paying higher wages), and have one man do all necessary maintenance work, and thus hold him responsible for every detail? The second alternative would seem to be the one productive of the best results, as it should insure more constant and rigid inspection of all the working parts of the signals and the principal mechanisms. At the same time better service should be obtained, not only from this inspection, but also because a signal out of order can be more promptly attended to.

*A paper by W. A. D. Short, Cincinnati, New Orleans & Texas Pacific, read before the Railway Signaling Club at Philadelphia, Feb. 21.

On the Cincinnati Southern both methods are in vogue; but the first is used as a means to the end of obtaining the second, the inexperienced men being put with the experienced as batterymen and laborers until they have learned enough to be able to care for the signals. When this time arrives, the territory is re-divided, and each man has a smaller number of miles to the section. The average number of miles covered, at present, by an inspector or maintaining man, is about 27; the longest section being 43 miles in length and the shortest 14. In this long section there is a space of 17 miles where there are no automatic block signals, so that the actual length of track protected is 26 miles; but valuable time is lost by the inspector in getting over the intervening space. In the final redistribution of the inspectors it is intended that the territory to be covered by one man should be about 14 miles, or some 10 miles less than the present average. The average number of signals maintained by one inspector will be 17.2.

In single track work the automatic block signal is an absolute signal. In other words, when the signal stands in the danger position, or remains at safety for an approaching train, and fails to change properly, the train must stop and flag through the block. This entails considerable loss of time, if the signal is not in working order; so that it is important that quick and efficient inspection service be had. With this end in view every facility for prompt notification to maintaining men should be furnished. If a train is delayed by the improper working of a signal, the fact should be reported by telegraph to the Superintendent from the first open telegraph station, and copies of this message should be sent to the maintaining man and to the office of the signal department. Maintaining men should be provided with railroad velocipedes to enable them to get over the road promptly, irrespective of trains. On the Cincinnati Southern every passenger train carries one of these velocipedes in the baggage car, for use by the head flagman when necessary to flag a block. These cars are fitted with appropriate brackets for holding a red flag during daylight and a red and a white lantern at night, with accompanying torpedoes and fuses.

Inspectors or maintaining men should be required to go over their entire territory daily. All relays and working parts of signals should be inspected daily. The inspector should endeavor to go over his territory in one direction on a train, and in the opposing direction on a velocipede; by this method the signals are observed under two different conditions, and defects in their working can be readily ascertained and quickly remedied, as the inspectors should take their velocipedes with them while using trains. Inspectors should post, daily, in telegraph office of their headquarters, a notice stating at what point on the line they expect to be during the day and the quickest way in which they can be reached, if emergency arises.

If possible, men should be procured for maintaining who have had some experience in this work, or at least know how to climb poles. When this is done, the signal man can be required to look after the ordinary repairs of the telegraph lines, in addition to the signal line wires, in his territory. This can be done without appreciably interfering with the signal work and it greatly helps the telegraph service.

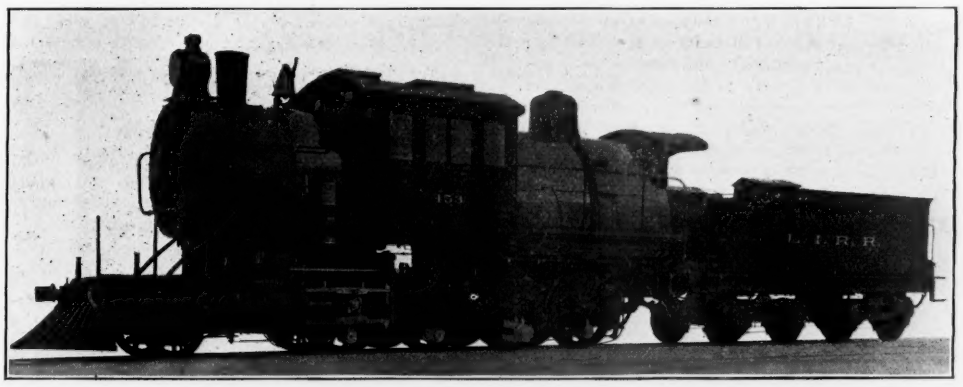
Relays should be adjusted when they are first put in service, and inspectors should be taught not to touch the adjustment. In case of failure, they should look for the cause of failure elsewhere, and not take up any of the ordinary leakage of circuits by readjusting the relay.

In the disk form of signal the counter-weight should be property adjusted when signal is first put into service. It is not necessary to change this adjustment, and maintaining men should be so instructed. They should be taught that, if the signal hangs in the danger position without apparent cause, this defect should be overcome by the addition of more battery on the signal circuit rather than make a slightly different adjustment of counter-weight. Very little trouble is experienced from this form of signal standing at safety on account of improper adjustment of counter-weight, but if this trouble should arise the inspector should report the case to the signal office, and not endeavor to change the weight.

Switch boxes should be inspected frequently—not less than every fortnight—and exterior parts, such as switch point lugs and the bolts in them, should be inspected daily. In inspecting switch boxes care should be taken to ascertain that rollers are tight on the shaft and properly adjusted, so as to throw the signal to danger when the point is opened ⅜ in. In adjusting switch boxes care should be used, particularly to make sure that the signals are held at danger during the full movement of the switch, including the full open position. There have been instances where switch boxes have been adjusted so that signals would go to danger properly when the point was opened ⅜ in., but the current would be restored to its normal course and the signals go to clear when the switch was full open. The shunt method of connecting switch boxes seems to be preferable to the method of break and shunt, or simply break of current. There has been no difficulty from this method

of throwing signals to danger when necessary, whereas in all forms of break connections signals are constantly going to danger on account of the opening of circuit in contact point, or springs, when it is not intended for it to do so.

The best method of maintaining lamps has not been definitely decided. Should the signalman himself take charge of the maintenance of the lamp, and be directly responsible for it? This method would seem, especially on long sections, impracticable, as it would constantly be calling maintaining men away from their signal work, or from important repairs, to attend to the lamps. Trackmen can take care of lamps; but they do not give good results, on account of lack of proper attention to all parts of the lamp. The best method would seem to be to allow trackmen to attend to cleansing, re-oiling and placing in position all the signal lights, and to hold signal men responsible for these lamps getting proper attention. If this is done, a signalman will report improper attention quicker than would be done otherwise. If we can get a lamp that will burn a certain number of hours and then go out without attention it will save half of the labor necessary for the maintenance of the lamps, as only one trip a day would have to be made by the lamp tender.



The New Consolidation Locomotives of the Long Island Railroad.

## Consolidation Locomotives for the Long Island Railroad.

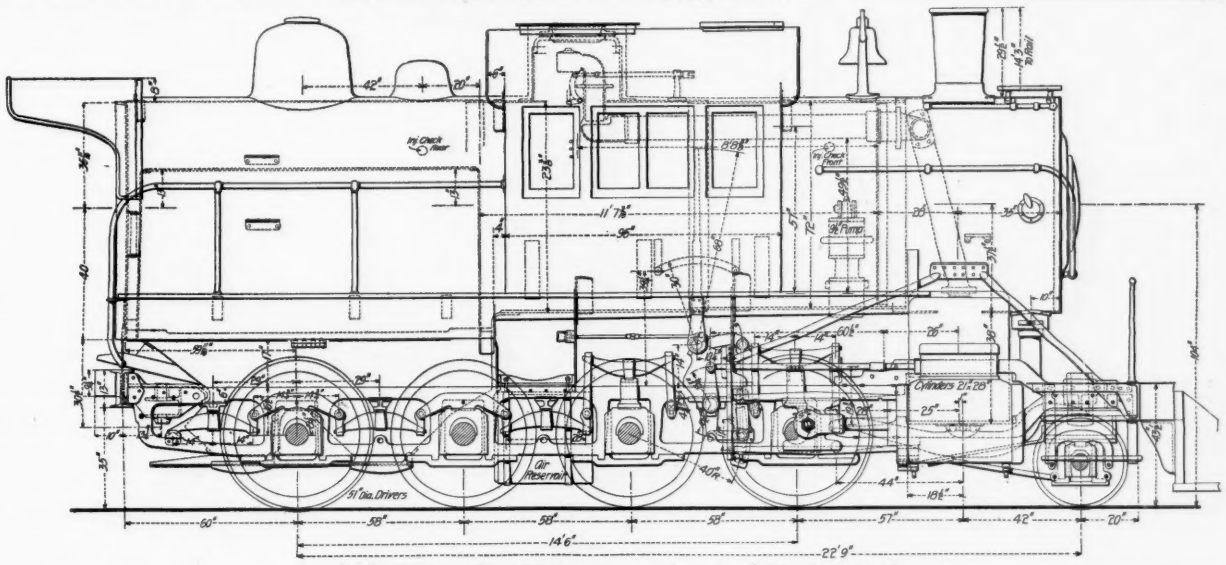
The Brooks Locomotive Works, in December last, delivered three wide-fire box consolidation locomotives to the Long Island Railroad, the principal features of which are shown by the accompanying engravings. These engines are designed to burn either anthracite or bituminous coal and have cylinders 21 in. x 28 in., 51 in. driving wheels with cast steel centers and weigh in working order 155,000 lbs., 135,000 lbs. being the weight on the drivers. The firebox is 84 in. wide and 120 in. long, extending outside the wheels, while the barrel of the boiler is straight and 72 in. in diameter at the front end. The firebox heating surface is 179 sq. ft., and that of the tubes 1,773 sq. ft., making the total heating surface 1,952 sq. ft.; the grate area is 69 sq. ft.

It will be noted from the drawings that the frames are securely braced, there being, in addition to the channels at the front and back, three heavy steel castings joining the frames; one of these is forward of the cylinders and directly above the leading truck, the other is near the middle and in front of the firebox, while the one at the rear answers the further purpose of an attachment for the draft gear. It will also be seen how braces extend from the smoke box, both forward and back, the latter being attached to the guide yokes. The valve gear is made very compact by placing the eccentrics on the second driving axle, and it will be seen that the reverse lever is an extension of the tumbling shaft arm. The smoke box arrangement and spark arrester used with these engines is that devised by Mr. J. Snowden Bell, which permits of a short extension front, this being the same arrangement as has been used with many of the large locomotives lately built by Brooks.

These engines are equipped with American driver brakes and Westinghouse brakes on the tender, Detroit lubricators, Prince safety valves, Sellers injectors, A. French springs and United States metallic packing.

The principal dimensions are as follows:

| | |
|---|---|
| Gage | 4 ft. 8½ in. |
| Kind of fuel to be used | Anthracite or bituminous |
| Weight on drivers | 135,000 lbs. |
| " " truck wheels | 20,000 lbs. |
| " total | 155,000 lbs. |
| " tender loaded | 86,000 lbs. |
| Wheel base, total, of engine | 22 ft. 9 ins. |
| Wheel base, driving | 14 ft. 6 ins. |
| " " total (engine and tender) | 49 ft. 6 ins. |
| Length over all, engine | 35 ft. |
| " " " total, engine and tender | 60 ft. ¾ in. |
| Height, center of boiler above rails | 8 ft. 8 ins. |
| " of stack above rails | 14 ft. 3½ ins. |




Wide Firebox Consolidation Locomotive, Long Island Railroad.

MR. S. F. PRINCE, JR., *Supt. Motive Power.* BROOKS LOCOMOTIVE WORKS, *Builders.*

| | |
|---|---|
| Heating surface, firebox | 179 sq. ft. |
| " " tubes | 1,773 sq. ft. |
| " " total | 1,952 sq. ft. |
| Grate area | 69 sq. ft. |
| Drivers, diameter | 51 ins. |
| " material of centers | Cast steel |
| Truck wheels, diameter | 30 ins. |
| Journals, driving axle size | 8 x 10 ins. |
| " truck axle, size | 5½ x 10 ins. |
| Main crank pin, size | 6¼ x 6 ins. |
| Cylinders, diameter | 21 ins. |
| Piston, stroke | 28 ins. |
| " rod, diameter | 4 ins. |
| Kind of piston rod packing | Metallic |
| Main rod, length center to center | 10 ft. |
| Steam ports, length | 18 ins. |
| Steam ports, width | 1⅝ ins. |
| Exhaust ports, length | 18 ins. |
| " " width | 3 ins. |
| Bridge, width | 1½ ins. |
| Valves, kind of | Richardson balanced |
| " greatest travel | 6¼ ins. |
| " outside lap | ¾ in. |
| " inside lap or clearance | 0 in. |
| " lead in full gear | 0 in. |
| Boiler, type of | Straight top, wide firebox |
| " working steam pressure | 180 lbs. |
| " material in barrel | Steel |
| " thickness of material in barrel | ½ in. |
| " diameter of barrel, outside | 72 ins. |
| Seams, kind of horizontal | Sextuple riveted |
| " " circumferential | Triple riveted |
| Thickness of tube sheets | ½ in. |
| " " crown sheet | ⅝ in. |
| Crown sheet stayed with | Radial stays |
| Dome, diameter | 30 ins. |
| Firebox, length | 10 ft. |
| " width | 7 ft. |
| " depth, front | 64 ins. |
| " " back | 58 ins. |
| " material | Steel |
| " thickness of sheets | ½ and ⅜ in. |
| " brick arch? | No |
| " water space, width— | Front, 4 ins.; sides, 3½ ins.; back, 3½ ins. |
| Grate, kind of | Cast iron; shaking |
| Tubes, number | 294 |
| " material | Charcoal iron |
| " outside diameter | 2 ins. |
| " length over sheets | 11 ft. 7⅛ ins. |
| Smokebox, diameter, outside | 75 ins. |
| " length | 63 ins. |

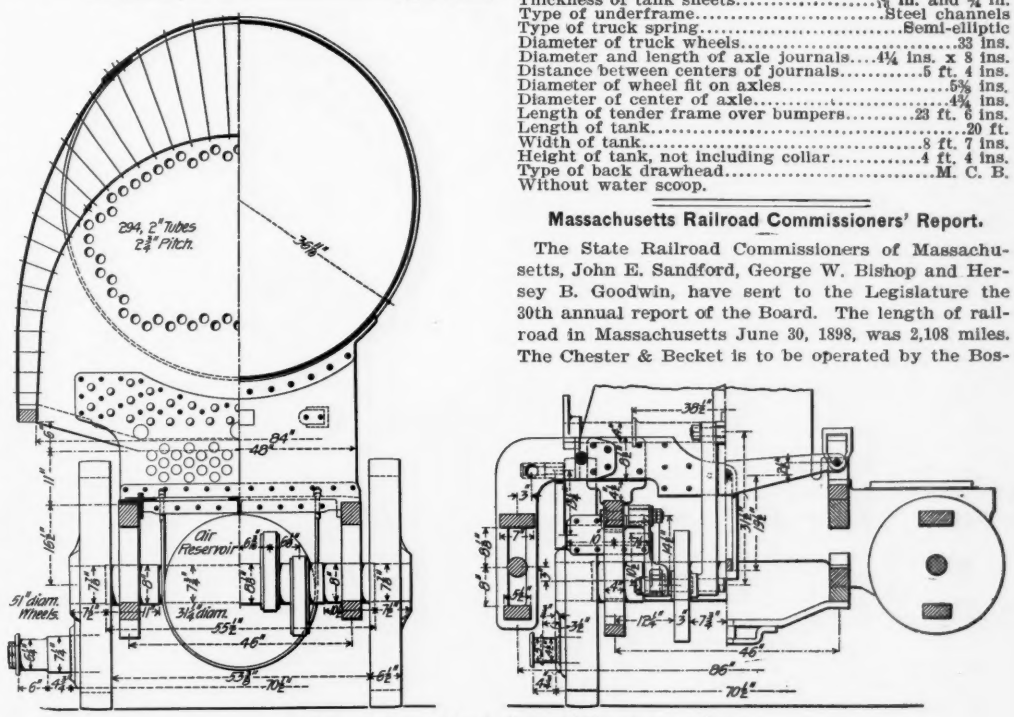
Other Parts.

| | |
|---|---|
| Exhaust nozzle | Single |
| " " | Permanent |
| " " diameter | 5 ins. 5⅛ ins. and 5⅝ ins. |
| " " distance of tip above center of boiler | 1 in. |
| Netting | Wire |
| " size of mesh or perforation— | 2½ ins. x 2½ ins. and 2¼ ins. x 1¼ ins. |
| Stack | Taper |
| Stack, least diameter | 15⅞ ins. |
| " greatest diameter | 18⅞ ins. |
| " height above smokebox | 2 ft. 6 ins. |

Tender.

| | |
|---|---|
| Type | Swivel trucks and steel frame |
| Tank capacity for water | 4,000 gals. |
| Coal capacity | 8 tons |
| Kind of material in tank | Steel |
| Thickness of tank sheets | ⅜ in. and ¼ in. |
| Type of underframe | Steel channels |
| Type of truck spring | Semi-elliptic |
| Diameter of truck wheels | 33 ins. |
| Diameter and length of axle journals | 4¼ ins. x 8 ins. |
| Distance between centers of journals | 5 ft. 4 ins. |
| Diameter of wheel fit on axles | 5⅝ ins. |
| Diameter of center of axle | 4¾ ins. |
| Length of tender frame over bumpers | 23 ft. 6 ins. |
| Length of tank | 20 ft. |
| Width of tank | 8 ft. 7 ins. |
| Height of tank, not including collar | 4 ft. 4 ins. |
| Type of back drawhead | M. C. B. |

Without water scoop.




Sections of Long Island Consolidation Locomotives.

## Massachusetts Railroad Commissioners' Report.

The State Railroad Commissioners of Massachusetts, John E. Sandford, George W. Bishop and Hersey B. Goodwin, have sent to the Legislature the 30th annual report of the Board. The length of railroad in Massachusetts June 30, 1898, was 2,108 miles. The Chester & Becket is to be operated by the Boston & Albany until Jan. 1, 1908, and the Southbridge, Sturbridge & Brookfield has been abandoned. The five principal roads reporting to the Board in 1898 now do 99 per cent. of the railroad traffic of the State. The statistics of traffic and earnings of these roads

for the year, which also cover the business on about 2,640 miles outside of the State, show some improvement over the preceding year, but this is wholly in the freight department, the passenger traffic showing a very slight falling off. Comparisons are made between 1898 and 1893, showing that as yet the companies have hardly more than regained the losses of the four lean years. Notwithstanding the great shrinkage in income the railroads have maintained their properties in good physical condition, have kept up their standards of construction and equipment and have made costly extraordinary improvements, especially stations, terminal facilities and elimination of grade crossings.

The lease of the New England road to the New York, New Haven & Hartford is reported at length. The Board had recommended the consolidation of these two roads, and the law authorizing the lease made it subject to the approval of the Commissioners. If the New Haven road continues to pay 8 per cent. the New England common stockholders will, under the exchange of shares, receive $1.60 yearly, per share, and the preferred $4. While it cannot be said that these rates are absolutely just, it appeared that no further concession could be expected on either side, and so the arrangement was approved. Six years from now 10 millions of New England bonds can be refunded at a saving of $300,000 yearly interest.

In speaking of the fact that 99 per cent. of the railroad business of the State is now done by four companies (the New England having been absorbed by the New Haven), the Commissioners make comparisons with 1872, when there were 32 other companies operating in the State. They remark that this process of consolidation has been accompanied by a voluntary reduction of rates; and the old idea that competition is necessary as a safeguard against oppressive rates is proved unfounded. "It seems to be safe to conclude that within certain limits consolidation may be beneficial to the public. There can be no question that there is also a limit beyond which consolidation ought not to go."

The number of persons killed on the railroads of the State during the year was 228, and of injured 849. Of the total (1,077) 148 were passengers, 584 employes, 83 persons crossing tracks and 262 trespassers. No passenger was killed by causes beyond his own control, but 83 were injured, as compared with only 24 in 1897. Other items in the accident record show considerable increases, and it would appear that the Boston & Maine reports accidents which on some other roads might be deemed of too little consequence to be included in the list. The chapter on accidents makes comparisons on the basis of employes killed and injured, per mile of road, with the statistics of Great Britain. The totals of all employes show about the same ratios in the two countries, but the injuries from coupling and uncoupling cars are very much less in Great Britain. Mr. Crafts, the clerk of the Board, who makes up this chapter, believes that in this class of accidents many comparatively slight injuries are reported in Massachusetts which are not counted in Great Britain. "The couplings used in England may also render the liability less there than here."

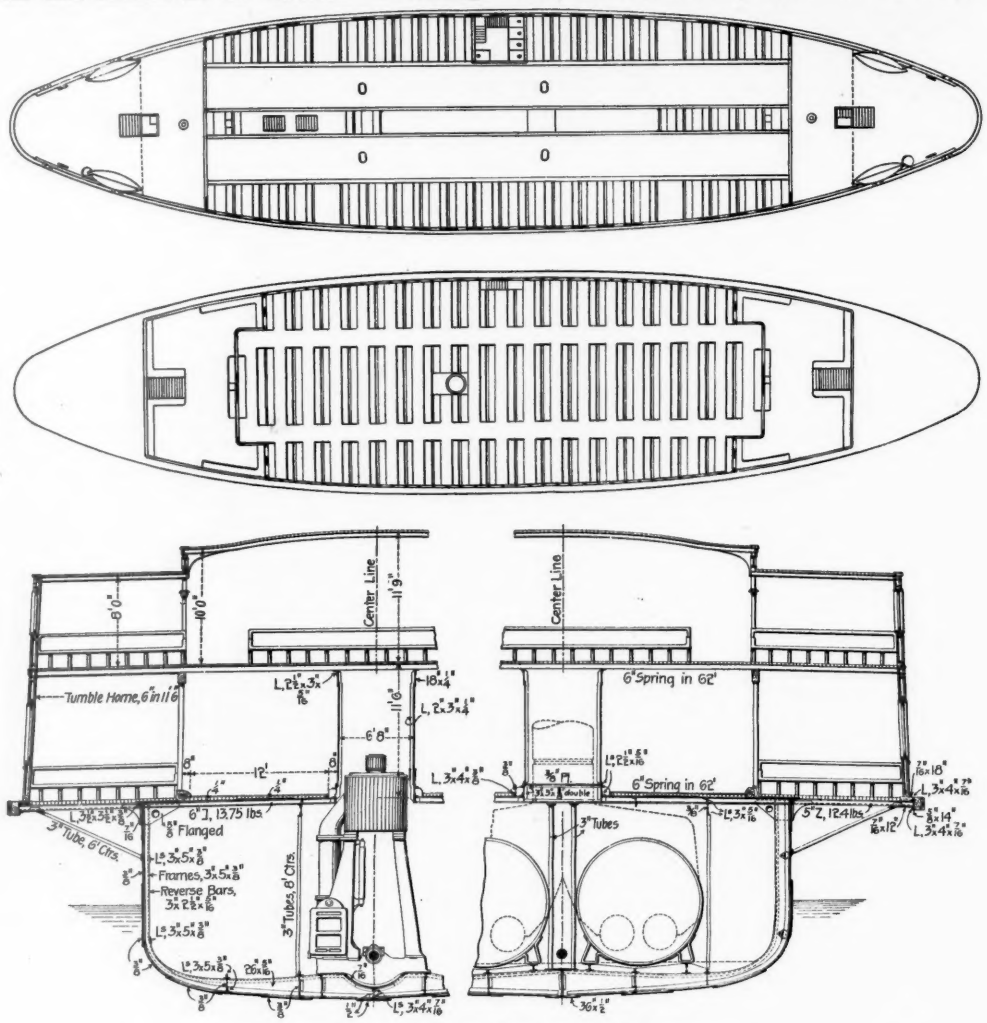
Prof. Swain's special report on bridges, being his twelfth annual report, is given in the usual form. He says that the general condition of the bridges in the state is excellent. The standard is now so high that but little work is necessary from year to year in replacing or strengthening defective bridges. The new bridges are generally very heavy and the use of guard rails is being extended. The Boston & Albany, however, has not yet adopted them. There are now in the state 67 spans of wooden or combination trusses, 677 spans of plate girders, 161 spans of riveted trusses and 76 of pin connected. The total length in feet of the bridges in the state is: Wooden 59,332, stone 5,807, iron 55,364. Particulars are given of the work done by each of the railroad companies in improving bridges during the period under review.

The Board was instructed by the Legislature last year to investigate suburban passenger fares to and from Boston, and it has done so, but declines to recommend any reduction in such fares. In the region of Boston non-transferable season tickets seem to have been abandoned and in place of them transferable tickets for 5, 10, 50 or 100 rides are sold. The rates for the 50-ride tickets are now about the same as those for 100 rides. Both of these are higher than the former season tickets, but the holder can use the same ticket for all the members of a family. The average rate for local tickets within the suburban zone is two cents a mile; for commutation tickets one cent or less. (These rates were reported in detail in 1895.) The demand for a modification of the suburban rates was, in substance, that 12-ride tickets should be sold at the same rate as 100-ride; and, to secure this, the petitioners were willing that the 100-ride rate should be slightly raised, if the Board thought necessary. The Commissioners say that the passengers in the suburban district have been favored as much proportionately as those outside that district; this would be one reason against making a reduction. Another is that in 1891 the Fitchburg road introduced 12-ride tickets, but did not succeed in appreciably stimulating traffic thereby. There was no complaint of the quality of the suburban passenger service nor any concerning the rates on the 50-ride and 100-ride tickets.

The Commissioners report in detail the collision at Whittenton Junction, Sept. 6, 1898, and the report is accompanied by a clear discussion of the question of colors for night fixed signals; but the only conclusion ventured is that opinion in favor of the abandonment of white, as a night signal color, seems to be gaining ground, and that probably this opinion is sound.

Of the 2,070 grade crossings in the State, 1,136 are protected by gates, flagmen or electric signals. Twenty-seven grade crossings were abolished during the year, 14 were in process of abolition at the end of the year, and petitions were pending for the abolition of 155 more. Under the law of 1890 the State has been assessed for the abolition of crossings $1,736,482 for the 8½ years to Dec. 31, 1898. This is one-quarter the total cost of the changes made. Under a special law covering the Boston & Providence improvement the State has been assessed $1,293,767. The combined expenditure by the State, the towns and the railroads for crossing changes to date amounts to over $12,415,500. The sum available from the State treasury the coming year will be $2,670,000.

The report gives the usual summaries of statistics for 10 years, including separate statistics for passengers to and from Boston and for flour and grain to Boston, and the principal averages for each of the five roads reporting.




Ferry Steamer Berkeley, Southern Pacific Company.

*Plans of main and upper decks and half cross sections through engines and through boilers.*

### Test of Lehigh Valley Locomotive No. 681.

On Jan. 30 and 31 five tests were made of the new heavy locomotive recently built by the Baldwin Locomotive Works for the Lehigh Valley R.R. This engine was described in the Railroad Gazette of Jan. 13, p. 20. The performance of the engine was very satisfactory, trains of over 1,000 tons being taken 20 miles up a grade of 62 ft. per mile at about 15 miles an hour. Following are the data of the tests in detail:

| | Test No. 1. | Test No. 2. | Test No 3 | Test No. 4 | Test No. 5. |
|---|---|---|---|---|---|
| Leaving time | 8:30 a. m. | 12:20 p. m. | 4:28 p. m. | 9:07 a. m. | 1:22 p. m. |
| Running time | 1 hr. 23 m. | 1 hr. 25 m. | 1 hr. 22 m. | 1 hr. 30 m. | 18 miles in 1 hr. 2 m. |
| Miles per hour | 14.5 | 14.1 | 14.6 | 13.6 | 17 4 |
| Temperature | 16 above. | 28 above. | 20 above. | 10 above. | 20 above. |
| Condition of rail | Frosty | Good. | Good. | Frosty. | Good. |
| Average steam pressure. | 180 to 200 lbs. | 200 lbs. | 200 lbs. | 200 lbs. | 200 lbs. |
| Total weight of train, net tons | 1,027 | 1,012 | 1,007 | 942 | 1 082 |
| Number of cars in train | 23 | 24 | 30 | 33 | 24 |
| Kind of cars | 22 King hopper and 1 private. | 23 twin hopper and 1 private. | 29 box and 1 private. | 32 box and 1 private. | 23 King hopper and 1 private. |
| Fox trucks | 22 | .... | 9 | 3 | 23 |
| Diamond trucks | .... | 23 | 20 | 29 | .... |

The first three tests were made on Jan. 30, and the other two on the 31st. The weather was clear on both days. The runs were on the Mountain Cutoff, from Coxton to Fairview, 20 miles. The grade is as above stated, and the sharpest curve is 10 degrees. The weight of the train does not include the weight of engine and tender. No stops were made to take water, the tender having a capacity of 7,000 gallons. In the first four tests the engine was at the rear of the train, and in the fifth it was at the front. The coal used in the engine was mixed, four-fifths anthracite buckwheat and one-fifth bituminous. The cars were all of 60,000 lbs. capacity, except in test No. 4, in which six of them were 20 ton or 25 ton.

The engine weighs 225,100 lbs., with 202,200 lbs. on drivers. Cylinders 18 in. and 30 in. x 30 in., and heating surface 4,106 sq. ft.

### The Ferry Steamer "Berkeley."

The Southern Pacific Company has recently put into service on its ferry line across San Francisco Bay, between the foot of Market street, San Francisco, and Oakland Pier, the steamer "Berkeley," a new double-screw steel boat, driven by engines of inverted cylinder, direct acting, triple expansion type. The hull is constructed entirely of steel and has, including bulkheads at the ends of the screw shaft, seven complete steel bulkheads, without openings below the main deck, and two bulkheads with small openings for the transfer of coal from the bunkers to the boiler room. Between these bulkheads are located the crew's quarters, engine room, boiler room, restaurant, wine room and toilet room. Access to these various compartments is had only from the main deck, making the boat safe against sinking in case of damage to the hull.

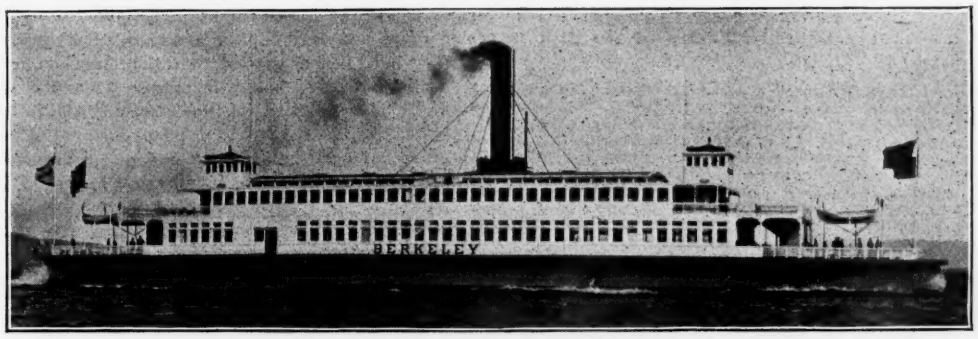
The main deck has a seating capacity for 580 passengers; a toilet room reached by a stairway from the saloon deck, and two driveways for baggage, mail and express trucks and wagons.

A single stairway at each end of the boat connects the main and saloon decks. The saloon deck has a seating capacity for 997 passengers in the cabin and 132 outside, making the total seating capacity of the boat 1,709 passengers.

The cabin seats are made of perforated black walnut on teakwood frames. The floor covering is interlocked rubber tiling. The cabin is painted dead white, with gold leaf ornamentation. The clear story

is glazed with art glass. Ventilation is provided for by the Plenum process, pipes being provided for the inlet of fresh air, properly heated in cold weather, and the efflux of vitiated air. The boat is lighted throughout by electricity.

The rudders of the boat are operated by steam steering gear. A special feature of this boat is its numerous large windows, glazed with plate glass and set at such height from the decks that an unobstructed view of the Bay of San Francisco can be had from all the seats. Under ordinary running conditions, the trip between San Francisco and Oakland Pier (4½ miles) is made in 17½ minutes.




New Southern Pacific Ferry Steamer.

The principal dimensions, etc., are as follows:

| | |
|---|---|
| Seating capacity | 1,709 |
| Length over all | 289 ft. |
| Length inside rudder posts | 260 ft. |
| Beam, molded | 40 ft. |
| Beam over wood guard | 64 ft. |
| Depth molded at guard | 16 ft. 6 in. |
| Depth molded at center | 17 ft. |
| Depth of hold | 14 ft. 10 in. |
| Draft, extreme load | 8 ft. 6 in. |
| Number of propellers | 2 (one at each end) |
| Diameter of propellers | 8 ft. |
| Registered tonnage | Gross, 1,945 tons; net, 1,245 tons |
| Type of boilers | "Scotch boilers" |
| Horse power | 1,450 |
| Boiler pressure | 165 lbs. |
| Number of cylinders | 3 |
| Sizes of cylinders— | 23 in. x 36 in.; 34 in. x 36 in.; 56 in. x 36 in. |
| Revolutions of screw per minute | 125 |

"Second story" landings are provided and used at both San Francisco and Oakland Pier, a large proportion of the passengers being thus able to pass to and from the stations on the saloon deck level.

The boat is named for the City of Berkeley, which is situated on the easterly side of San Francisco Bay, and is noted, among other things, as the location of the University of California.

The vessel was designed and built by the Union Iron and Shipbuildings Works of San Francisco under the general specifications of the Southern Pacific Company.

## Long Stroke Locomotives on the Florida Central.

About four years ago the Florida Central & Peninsula Railroad began to decrease the diameter of the cylinders and to increase the stroke on the new passenger locomotives; otherwise the engines were like the standard ones having cylinders 19 in. x 24 in. The first alteration was a change in the cylinders to 18 in. x 26 in., and these engines pulled more cars and made better time than the 19 in. x 24 in. locomotives.

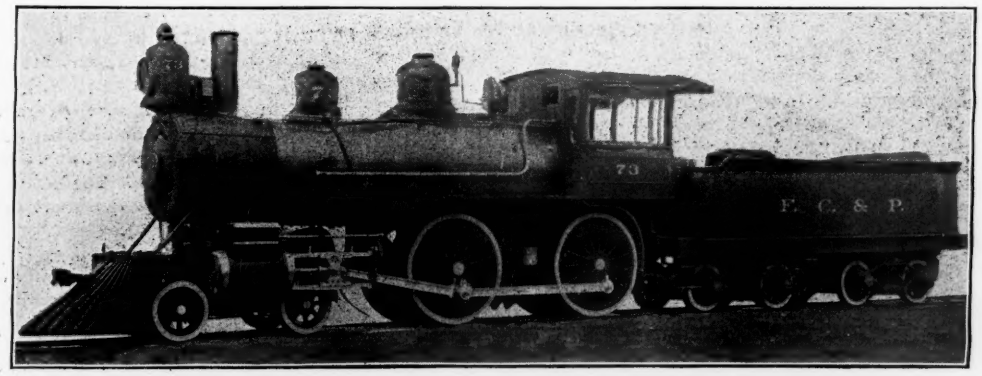
Two engines recently built by the Cooke Locomotive & Machine Company for this road have a stroke of 28 in., with a cylinder diameter of 18 in. Mr. T. A. Phillips, the Assistant General Manager, states that the Cooke locomotives show as much improvement over the 26-in. stroke engines as the latter did over the standard.

These new engines are used on the heaviest and fastest passenger trains and they have run well, even over the heaviest grades, which are from 60 to 80 ft. to the mile. There are many five to six degree curves extending 7½ or 8 miles over a large part of the run. Soft coal is burned in these engines. Mr. Phillips writes that these engines pull passenger trains of 14 cars 80 miles in 2 hours and 10 minutes, or less. The following are some of the leading dimensions of the two Cooke locomotives, one of which is shown in the accompanying engraving:

| | |
|---|---|
| Class | Eight-wheel passenger |
| Gage | 4 ft. 8½ in. |
| Total weight in working order | 111,000 lbs. |
| " " on drivers | 75,000 lbs. |
| Total weight on truck | 36,000 lbs. |
| Loaded weight of tender | 88,000 lbs. |
| Total wheel base of engine | 23 ft. 10 in. |
| Driving wheel base | 9 ft. 1 in. |
| Wheel base of engine and tender | 49 ft. 8¾ in. |
| Cylinder | 18 in. x 28 in. |
| Driving wheel | 69 in. dia. |
| Engine truck wheels | 33 in. dia. |
| Driving axle journal | 8 in. x 9⅞ in. |
| Engine truck axle journal | 5½ in. x 11⅞ in. |
| Boiler type | Extended wagon top, radial stays |
| " working pressure | 200 lbs. |
| " dia. first course | 62¼ in. dia. |
| " firebox length | 77 in. |
| " " width | 33 in. |
| Boiler, style of grate | Rocking |
| " tubes, number | 258 |
| " " dia. and length | 2 in. dia. x 11 ft. 2¾ in. long |
| " thickness of shell | ⅝ in. |
| Slide valve | Richardson |
| " " travel | 5¾ in. |
| Steam ports | 1¼ in. x 19 in. |
| Exhaust " | 3 in. x 19 in. |
| Lap | 1 in. outside lap; ⅛ in. inside lap |
| Exhaust pipe | Single |
| Smokebox | Extended |
| " netting | 2½ in. mesh |
| Center of boiler from rail | 8 ft. |
| Top of stack from rail | 14 ft. 8 in. |

**Tender.**

| | |
|---|---|
| Frame | Wooden |
| Truck style | Diamond truck, swing bolsters |
| " wheel | 33 in. |
| " axle journal | 4¼ in. x 8 in. |
| Tank water capacity | 4,200 gals. |
| " coal " | 7 tons |



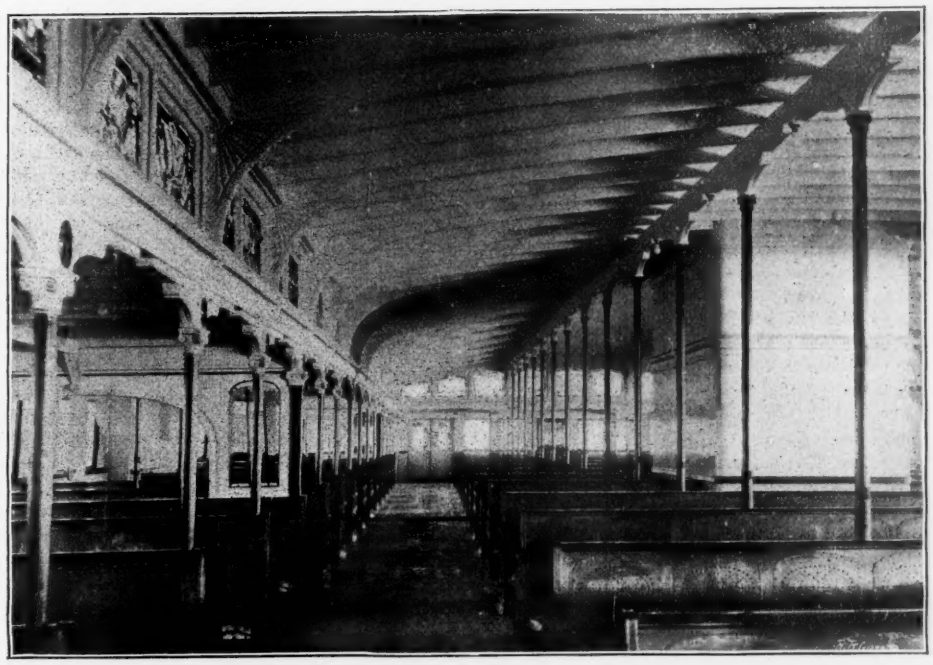

18 in. x 28 in. Locomotive for the Florida Central & Peninsula Railroad.
*Built by the* COOKE LOCOMOTIVE & MACHINE CO., *Paterson, N. J.*

Names of Makers of Special Equipment.

| | |
|---|---|
| Tires | ½ Midvale, ½ Latrobe |
| Driving springs | French Spring Co. |
| Engine truck springs | " " " |
| Tender " | " " " |
| Brake | Westinghouse |
| Air signal | " |
| Injectors | No. 9½ Sellers' |
| Inspirators | No. 9 A. Hancock |
| Lubricators | Nathan triple |
| Steam gages | Ashcroft Manufacturing Co. |
| Safety valves | 2½-in. Coale muffled |
| Headlight | Pyle electric |
| Piston rod packing | United States Metallic Packing Co. |
| Valve stem " | " " " " " " |
| Magnesia boiler lagging | Keasbey & Mattison Co. |
| Sander | H. L. Leach D. 2 single |
| Brake shoes | Ramapo Iron Works |
| Brake beams | Sterlingworth standard |
| Car heat equipment | Gold Car Heating Co. |
| Coupler, M. C. B. for pilot— | Shickle, Harrison & Howard Iron Co. |
| " "Tower" for tender— | National Malleable Castings Co. |

## Is England Being Left in Railroading?

The announcement that the Russian Government has decided to equip every freight-carrying wagon on every Russian railway with the Westinghouse continuous air brake is a very apt commentary upon the discussion which has been going on in these columns during the last six weeks upon the suggested adoption in this country of automatic couplers, air-brakes and other forms of American freight train equipment. While we have been talking, it seems Russia has been acting. Prince Hiekoff satisfied himself that from the financial point of view alone the expenditure of several millions of roubles for freight brakes would pay for itself. The Russian Government has insisted that the brakes shall be made in Russia, and an important factory is now being erected in St. Petersburg. This establishment will be equipped with American machinery and labor-saving appliances of the latest models, as developed in the great Westinghouse works. The English railways up to now have made no effort whatever to supply their goods trains with these brakes. In this respect they are not only far behind the railways of the United States, but also behind those of Canada and Australia.



Upper Deck of Ferry Steamer Berkeley.

"Far behind the railways of the United States"—that is the indisputable verdict in the matter of air-brakes for goods trains; must it also be the verdict when comparisons are made as to other important features of equipment? There are men of authority in this country—an increasing number of men of the highest patriotism and also well furnished with knowledge—who are constrained, however reluctantly, to give to this question an affirmative answer. "England has been standing still," say they, "while other countries have been moving forward. Ten years ago, we stood indisputably at the head of the world in railroading. Not the most optimistic observer can maintain that we stand in that position to-day. Other countries have pursued railroading scientifically. We have been content to pursue it by rule of thumb. The result is that we are behindhand in permanent way, in locomotive power, in rolling stock, in signalling, in traffic management and, as a natural consequence, in general efficiency." It is a compendious indictment, far too sweeping, one may think to be substantiated; but during the past week I have heard it from the lips of two men of exceptional knowledge—two men unacquainted with each other, and each absolutely unconscious that the other had given, or would give, to the same recipient an expression of almost precisely similar views. Let one go over very briefly some of the chief counts of their indictment.

"Will any one tell me why English engineers persist in the use of 'chairs,' instead of following the American practice of having three sleepers to our two and larger fishplates, and bolting the rails down direct on to the sleepers? I have asked many engineers to give me a reason for this singularity of English practice, and I have never got anything more than the vague answer: 'We do not think that a properly constructed permanent way can be laid without the use of chairs.'" This is a practically verbatim extract from the conversation of each of my English advocates of American methods, and they both added that they attribute the greater

(*Continued on page* 142.)

RAILROAD GAZETTE

ESTABLISHED IN APRIL, 1856.
PUBLISHED EVERY FRIDAY,
At 32 Park Place, New York.

## EDITORIAL ANNOUNCEMENTS.

**Contributions.**—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

**Advertisements.**—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

The introduction of "ordinary" sleeping cars on the Baltimore & Ohio, briefly noted last week, is an experiment of more consequence than at first appeared. The cars are not second-class or tourist sleepers furbished up; neither are they standard sleeping cars that have outlived their usefulness for the highest class of service. They are brand new cars. Moreover, the Pullman Company is building forty of the same kind, so that any railroad which wishes to make a reduction of 50 per cent. in the berth rates offered to its passengers will have a chance to try the experiment. The new cars have hard wood finish (mahogany, we believe), rattan seats and seat backs, carpets in the aisles, curtains practically as good as any, and all toilet conveniences. It must be that there are many passengers on all the principal roads who ride in day cars all night because they think that $2 or $2.50 a night is too high a price for a lodging; and if the Pullman Company can teach these the habit of using sleeping cars it will very likely confer on them a blessing. Experience with tourist sleepers for many years in the West has shown that the trouble from dirty or otherwise objectionable passengers in low-priced sleeping cars is of very much less account than has generally been thought; and, indeed, some competent observers say, in substance, that it is only a bugbear. But the fact that well-managed, low-priced sleeping cars will be a boon to the public does not of itself warrant the assertion that such cars should be generally introduced. It remains to be seen how the new cars affect the income of the older, higher priced cars. If there should not be a good increase in the total number of sleepers in the sleepers the Baltimore & Ohio would be simply running two cars for about the same income that it formerly received for running one, which would be very questionable progress. Moreover, nearly every general passenger agent who desires to keep his rates stable and uniform is suspicious of every addition to the variety of rates offered to the public. Second-class sleepers, and second-class rates of all kinds, have been a fruitful instrumentality for secret and illegal manipulation of rates; and traffic men will naturally look upon this last innovation as another variation on the same old tune. But, of course, there is no good reason why American railroads cannot deal with a multiplicity of classes and rates as well as those of Europe do if they really desire to do it. The fundamental question is one of economy.

The question whether it is right to exclude color-blind persons from the train service is being thrashed over once more—this time on a prominent road in Ohio. Nations are sure to forget many vital lessons of experience every thirty years or so, and have to have the experience repeated, as has been illustrated recently in this country in the matter of certain lessons learned in 1861 and forgotten before 1898; but locomotive enginemen seem to need to have this color lesson repeated every 30 months, or weeks. The right and wrong of color-blind examinations has been explained over and over again; yet we read that on the Ohio road referred to the men "kick" at being examined, and have induced the company to modify its requirements. The General Manager of the road is reported as saying:

> At their own request, the men will not be examined as to color-blindness until next April. The examinations will then be made by the division superintendents and trainmasters, and not by physicians, as has been the case heretofore. The colors the men will be tested in will be red, white, blue and green, the colors that are used—these four and no more—and the tests will not be made from different colored yarns, as has been the custom, but with flags and lanterns that are actually in use on the road. The test will be only such as is required to cover the law, and there will be no selecting of different shades of the same color by the men, nor will they be required to distinguish crushed strawberry or royal purple.

And yet any intelligent person, engineman or any one else, if he really desired to know the true condition of his own eyes, would quickly choose the yarn test in preference to any other. It determines the true state of the eyes much more readily than any less elaborate test, and it tells nothing that is not true. The suspension of some of the requirements and limiting the tests to the two colors used in flags and lights simply gives a dishonest man a better chance to succeed in cheating the company. Surely every honest engineman must be glad to have dishonest ones weeded out of the service. The dishonesty is itself good cause for dismissal, whether the man's eyes do any harm or not. A railroad which aims merely to comply with the law may do itself great injustice, for most or all the laws on this subject are so loose that evasion of their spirit while complying with their letter is the easiest thing imaginable. As to the crushed strawberry and royal purple, the officer quoted seems to be a little off. Probably the worst color-blind on his road could distinguish these from each other. What the men complain of is being required to give the names of unfamiliar colors or shades. But this complaint is the most absurd one of the whole lot, for no competent inspector makes any such requirement.

### Coverings for Locomotive Boilers.

In our issue of Sept. 30 last we referred to the extensive laboratory tests of covering materials for steam pipes and boilers, made by Mr. Charles L. Norton at the Massachusetts Institute of Technology, and suggested that certain conclusions drawn from these and similar tests might safely be applied to coverings on locomotive boilers, regardless of the differences between the atmospheric conditions in the two cases. These conclusions to which it was thought the laboratory tests pointed were briefly as follows: First, that it pays not only to cover all the surface possible of locomotive boilers but also all exposed passages leading to the cylinders, and all steam pipes leading to pumps, injectors and other steam-using attachments, although there are those who profess to believe that it does not pay to cover even the boiler. Second, that with locomotive boiler coverings now generally used, from 1¼ to 1¾ in. thick, there is probably but a small difference in the total heat saving produced by the best covering and by the poorest, provided there are no air currents through the covering or between it and the boiler but that the "air cell" coverings when properly applied really furnish the best protection for locomotives.

These conclusions based upon the laboratory tests are now verified in a rather remarkable manner by the elaborate road tests made on the Chicago & Northwestern, the results of which were presented by Mr. Quayle before the Western Railway Club and published in our last issue. It certainly gives added weight to both kinds of experiment that the conclusions from each are in such close agreement.

Any one reading the report of the road tests must be impressed by the fact that the different coverings used gave quite similar efficiencies due to the thickness of the material. Thus, the plastic covering of the Northwestern, which many roads have very properly abandoned, shows an efficiency of 60.2 per cent. in the running tests, while the asbestos covering which made the best showing had an efficiency of 64.8 per cent. Had thin layers of these materials been used the results would doubtless have been much more favorable to the latter, although even the difference shown by the tests would pay for the best covering in about two years, other things being equal. As stated, however, in our former article, several things besides the first cost must be considered in determining the ultimate cost or commercial efficiency of any covering, including the cost of the first application and the cost of removing and reapplying several times.

Doubtless the most interesting facts brought out by the road tests are those concerning the effect of speed on the boiler radiation, as on this nothing definite had before been known. It may probably now be taken as settled that the radiation from a bare locomotive boiler increases with the speed much faster than would the radiation from the same boiler if protected in the usual manner. But on the other hand with such a covered boiler the effect of speed on the radiation can by no means be disregarded as some have contended, as the average condensation of steam per minute, in the covered boiler of the test was found to be 3 lbs. when at rest and at 28 miles per hour about 5.5 lbs., while it is estimated that the condensation under similar conditions at 80 miles an hour would be about 10.6 lbs.

In concluding Mr. Quayle calls attention to the fact that in the tests the radiation losses which were measured do not include radiation from the saddles and cylinders or from any portion of the locomotive excepting the boiler itself. He also says that: "Improvement is to be found not only in improving the character of the covering itself, but chiefly, probably, in extending the covered area of the boiler and projections attached thereto;" all of which seems to be a most satisfactory conformation of the best previous knowledge and opinion on this subject.

### The Rulers of New York and the Elevated Railroads.

The nearest approach to rapid transit furnished to the citizens of New York City is by the Manhattan Elevated Railway, running from the Battery, by both eastern and western lines north to the Harlem River and beyond it. In severe weather, such as not infrequently stops service on the surface roads, it becomes the only available means of transportation for considerable distances on Manhattan Island. In speed, comfort and volume of service combined the Manhattan system is the most remarkably successful city railroad in the world. With progressive management and reasonable encouragement from the city government it could give "real rapid transit," subject to few or none of the fundamental drawbacks of an underground road, and this at far less first cost.

Its passenger carrying capacity has been only partially developed. For example, by the proposed change to electric motive power it would become possible to run seven-car trains instead of five-car trains, increasing the passenger accommodation by 40 per cent., with no material change in the structure except lengthening the platforms. If this change were supplemented by the additional tracks proposed to the Rapid Transit Commission the quickest and most comfortable means of travel which the city has ever known would be given to, say, 50 or 60 per cent. more people than now enjoy it.

During the past month the company has announced its intention, notwithstanding the refusal of the Rapid Transit Commission to grant rights to extend the lines, to proceed with the electrical equipment of all of its existing road, and to provide money for the purpose an issue of $18,000,000 stock is proposed, to be allotted at par to the present shareholders. This, and its attendant complications, at once caused the course of the stock in the market to become an interesting matter to the rulers of the city of New York, and this should be borne in mind in reviewing recent incidents.

On Feb. 17, the Secretary of the New York City Park Board served a notice on the company to remove its structure from Battery Park, an essential link in its line, within six months. The notice was based on the following clause of the grant to the company, made by the Park Board in 1876:

> "Fourth—That after six months' notice, in writing, by the department or the successor thereof given of intention to revoke the right of way and license hereby granted, shall have been served upon the said company, its successors or assigns, and after such revocation shall have been made, this license and all rights hereby conferred shall cease and determine, and the company, its successors or assigns, shall no longer be authorized, by virtue of this agreement, to use such right of way or structure under this license, and the party of the first part, by the department or the successor thereof, may require the company, its successors or assigns, forthwith to remove from the limits of the Battery the railways, columns, supports, etc., and the materials thereof, which shall have been there constructed or placed pursuant to the license hereby granted, anything herein contained to the contrary notwithstanding."

It is hardly to be supposed that the company's occupancy rests alone on so slight a tenure as the article indicates, but the legal situation does not now concern us; the important thing to note is the

attitude of the controlling authorities of the city of New York toward its only present available means of rapid transit.

It is indicative of this attitude—it can scarcely be considered a coincidence—that on the following day, Feb. 18, the city Board of Health reported 56 causes of complaint against the elevated road, being the result of an inspection made on Thursday, Feb. 16. This date of inspection should be noted, because on that day, as the result of a snow storm without precedent, the Broadway cable cars were for some time inoperative, the electric cars were doing only partial service, and it was raining. A sample of the complaint is as follows:

"The temperature of the atmosphere in the cars in which I rode was hot and stuffy when the doors were closed between stations, causing the passengers to perspire freely. On approaching stations, the guards throw open both doors of cars Nos. 2, 3 and 4 of each train, permitting a through-and-through flow of cold air, which caused a drop in the temperature of at least fifteen degrees, while the passengers were entering and leaving the trains, and thereby endangering the health of those who ride for a long distance, as a series of these draughts is liable to occasion catarrhal and other affections of the air-passages and lungs."

The time while the doors are shut between stations varies from less than one minute to less than two minutes; the doors are open on the average about 15 seconds; the official record of the temperature at noon on this day was 34°; for the reason above stated the city travel was largely concentrated on the elevated cars. Does anybody believe that the temperature went up and down 15° in the cars on that day? It might perhaps have done so near the doors, but could not have varied so widely throughout the car. But what if it did? The doors had to be opened about once a minute to load and unload the passengers, as they must be on the street cars, and indeed it is highly important that they should be opened very often to flush the cars. The officer of the Board suggests vestibules. But the openings for entrance and exit of passengers cannot be diminished. Indeed, one favorite fad of reformers is to provide side doors and so give more openings. The same officer complains that the end cars are not flushed, and with a light heart proposes adequate ventilators for those cars, but he does not specify how all these cars, crowded to the rails and necessarily opened every minute, are to be kept at an even and moderate temperature and ventilated at the same time. If he could patent the means of doing all this and if his plan would work he could make his fortune. The other 55 complaints are just about as wise as this one; but really we doubt if even the man who formulated them takes them seriously.

These complaints were followed by the publication on Monday of a report by a civil engineer, Mr. W. D. Gardner, an officer of the Board of Health, acting under instructions. He says:

The evidences of the effect of the rolling stock on the structure of the elevated tracks appear to be limited to a shearing strain on the rivets of the girders in the earlier built and older portions of the road. The strain is undoubtedly greater than the road was expected or intended to support, due to longer trains drawn by heavier engines at more frequent intervals. These weakened rivets have been and are now being replaced in greater number on the lines of the Third and Ninth Avenue roads, on the Bowery and Greenwich Street, and on West Broadway are being reinforced by additional braces, ties and girders. The entire system, including stations, with a few exceptions, needs painting.

From this carefully guarded statement the President of the Board of Health was reported to have drawn this sweeping conclusion:

The examinations are to be continued. If the engineers report that in their opinion the structure is unsafe, the trains will be stopped. I don't believe that there is an inch of the structure that is safe if the same conditions exist all along the line as exist in the parts examined by Expert Gardner.

But Mr. Murphy denied having made the statement, and said he had not made any comments whatever, which is sensible. The net result of all this was a prompt rise in Manhattan stock, which is perfectly logical, for the fundamental weakness of the attack was apparent on its face. The only serious element in it was the threat to dive the Manhattan off from a narrow strip of the Battery Park; but the city of New York would never permit an interruption of the service of the Elevated. It would not have to vacate the park until some other and adequate running arrangements were made.

Railroad operating tempered by Populist legislation is Arcadian as compared with furnishing transportation to the people of New York City under a government which looks with hungry eyes at the possibility of the honest spending of eighteen million dollars for an improved service.

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The British Light Railways Act of 1896 is being availed of, not only for the construction of new railroads, but also for the improvement of old ones. An order lately issued by the Commissioners, and confirmed by the Board of Trade, authorizes "working as a light railway," that is to say, the establishment of passenger service on a short line in Scotland which heretofore has been used only for freight. It is a part of the Carmyllie Branch of the Dundee & Arbroath Joint Line, the owners being the Caledonian and the North British companies. This branch was opened as a private railroad in 1854, and passenger service is to be introduced on a length of five miles. Whether or not the demand for passenger trains has been a "long felt want" or is due to circumstances which have recently arisen, we do not know; but any railroad man in Western America would at once ask the people along this line why they did not have passenger trains put on 45 years ago. That is what he would have done. It is true that he might have got along with a single second-hand passenger car, worth $500; and the weight of the rails, the speed of trains across highways, the signalling and other Board of Trade refinements would not have engaged a very large share of his attention. But he would have got the people over the road, in some way, and would have managed to do it so as to give tolerable satisfaction both to travelers and legislators. While the case of the Carmyllie branch illustrates a decided advance in the attitude of the British Government, the advance—accomplished by a retrograde in the physical standards heretofore maintained—is not permitted without minute supervision of the railroad on the part of the Board of Trade. The restrictions imposed by this supervision have been heretofore set forth in the Railroad Gazette. The principal restrictions imposed on companies establishing "light railways" are on the speed of trains in general, the speed at grade crossings, and the speed at curves of less than a certain radius. On the Carmyllie road no vehicle must have a greater weight than 14 tons on any one pair of wheels. Gates, distance posts, etc., are required at grade crossings, but nothing is said about the use of bells or whistles on the locomotives. A tender engine running backwards must not travel faster than 15 miles an hour. A home signal must be provided in each direction at all meeting stations. Signalling and interlocking may be simple, but must meet the approval of the Board of Trade. If the passenger cars have suitable steps there need be no platforms at stations, and no shelter is required at any station.

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"Murphy's Lantern" is the heading of an item in the Lexington (Ky.) Leader, which tells how Superintendent W. J. Murphy, of the Cincinnati, New Orleans & Texas Pacific, examines his trainmen on their proficiency in the train rules. It does not mean, however, that Mr. Murphy uses his own lantern to illustrate how the "train-parted" and "back-up" hand signals should be made; but that he uses a stereopticon, in a dark room, to show pictures of "life-size" signals. He shows semaphores and other fixed signals; trains with markers, and classification signals, and anything which will aid the brakeman who is tongue-tied and is afflicted with penman's paralysis to give intelligent answers to questions about the meaning of rules. The acquisition of knowledge has now become so easy that reading and writing will soon be lost arts. One of these days some yellow journal will offer a $5,000 prize for a lecture with which the stereopticon cannot be used—and will find no takers. As far as Mr. Murphy's scheme is concerned, we must modestly suggest that it is far behind the times—unworthy a superintendent who formerly lived in the metropolis. The only up-to-date plan is to use the cinematograph, with not only trains in motion, but with phonograph and megaphone accompaniments for teaching the manipulation of the bell and the whistle. Who shall say what heights of rhetorical proficiency common passenger brakemen might not attain if only they could enjoy the benefit of two or three 40-week terms in a megaphone school? With competent professors such a school would please the public better than an air-brake school.

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When the Prussian Government submits to Parliament its financial budget for the coming year, it must estimate receipts from all sources and all expenditures. This includes the railroad budget, in which are given estimates of earnings from every branch of traffic and of all kinds of expenditures. The budget recently submitted by the Finance Minister, Dr. Miguel, for the fiscal year ending with March, 1900, specifies the number of tons of rails, iron ties, other iron, coal from each producing district, the number of locomotives and cars of each kind which will be required during the year, and the price of each kind. From this it appears that the State Railroads expect to buy 435 locomotives during the year, and pay an average of $11,960 apiece for them; 598 passenger cars at $3,166 each, and 6,550 freight and baggage cars at $705. The freight cars for the most part are of 27,500 lbs. capacity, and are four-wheeled. The 168,510 tons (of 2,204 lbs.) required are to cost $26.20 per ton; 82,833 tons of iron ties, $24.20 per ton; other iron (fish plates, bolts, etc.), $40.93. Coal on the average is estimated at $2.18 per kilometric ton, the cheapest being the Upper Silesian at $1.98, and the dearest the Saar coal at $2.59. A small quantity of lignite is used at $1.37 per ton. Altogether, 5,103,320 tons of coal, coke and briquettes will be wanted, more than a tenth of it briquettes made out of fine coal.

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One of the gratifying results of the improved relations of the Trunk Line railroads with each other is the enforcement of the agreement, which it was attempted to put in effect some time ago, to graduate the passenger fares between New York and Chicago according to the speed of the trains. The standard fare is $20, and the regular fare by the differential lines is: Erie, $18; Erie and Nickel Plate, $17; Lackawanna, Lehigh Valley, and West Shore, $17. The standard minimum time is 28 hours, by all lines, and for each hour taken off this time one dollar is added to the fare. The New York Central and the Lehigh Valley each lengthened the time of one westbound train, so as to avoid raising the fare; and the list of excess-fare trains, westbound, now stands as follows:

| Road. | Leave N. Y. | Connection. | Excess fare. | Total fare. |
|---|---|---|---|---|
| N. Y. C. & H. R. | 5:30 P. M. | L. S. & M. S. | $4 | $24 |
| West Shore. | 12:45 " | Wabash | 1. | 18 |
| Erie | 7:25 " | N. Y. C. & St. L. | 2 | 19 |
| " | 7:25 " | Wabash | 1. | 19 |
| D. L. & W. | 7:00 " | N. Y. C. & St. L. | 1. | 18 |
| " | 7:09 " | Wabash | 1. | 18 |
| Lehigh Valley | 11:50 A. M. | C. & G. T. | 1. | 18 |
| " | 11:50 " | Wabash | 1. | 18 |
| Pennsylvania | 7:50 " | P. Ft. W. & C. | 3. | 23 |
| " | 9:50 " | " | 4. | 24 |

An unusual train accident happened on the London & North-Western Railway of England on Jan. 12 at Penmaenmawr, on the line to Holyhead, in which two persons, the engineman and the fireman, were thrown into the sea and drowned. At the point named the road runs along the seashore, being separated from the beach by a wall two feet thick. A gale had been blowing for some time, the sea was driven much higher than usual and the waves beat against the wall until a small part of it gave way. The water then rushed in and undermined the track. Repairmen were watching the place and one of them immediately ran to stop a fast freight train approaching from the east, but it was coming through a tunnel and ran past the signalman, and the engine was overturned at the washed out spot. This train was on the track farthest from the sea. From direct-process pictures, printed in Engineering, it would appear that the wall was of substantial masonry, of the thickness above mentioned and that the track was from 10 ft. to 20 ft. above the mean level of the sea. From the photograph—which, however, is not very distinct in this feature—it would appear that at low tide, and perhaps at all ordinary tides, the foot of the wall is above the level of the water.

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The Gotthard Railroad is not a very profitable enterprise, considering its entire cost, though it has large traffic and earnings. The trouble is with its great cost, averaging $305,272 per mile of road (169 miles). More than two-fifths of its cost, however, was supplied by subsidies from Switzerland, Germany and Italy, whose claims are subordinate to those of the capital stock and bonds, and the shares received 5.8 per cent. dividends in 1897 and 6.8 in 1896. In 1897 the gross earnings were $20,393 and the net $7,983 per mile. Per train mile the receipts were $1.86 and the expenses $1.09. The traffic was equivalent to 485 passengers and 712 tons of freight each way daily. The average rates received were 2.077 cents per passenger-mile and 2.136 cents per ton-mile. The average train loads were light, naturally, equivalent to 31½ passengers and 45 tons of freight, for passenger and freight train mileage are not reported separately. The force employed is very large, amounting to 19⅝ men per mile of road. The force employed in supervision and maintenance of track alone was 6 per mile of road.

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The passenger traffic on the Hungarian State Railroads, which increased so greatly after the introduction of the low zone tariff, continued to grow until 1896, when it amounted to 1,055 millions of passenger miles; but in 1897 it fell off no less than 9 per cent. There was a great fair in celebration of the thousandth anniversary of Hungary in 1896, and this gave a great impulse to passenger traffic that year. The freight traffic also decreased from 1896 to 1897, but only 2¾ per cent. The receipts per passenger-mile averaged 0.918 cent in 1897; per ton-mile, 1.38 cents; the former a trifle more and the latter a trifle less than in 1896. The gross earnings were the very moderate sum of $5,022 per mile in 1897, which was 10 per cent. less than the year before; per train-mile the earnings fell from $1.40½ to $1.34.

## NEW PUBLICATIONS.

Journal of the Association of Engineering Societies.—This magazine for December gives the addresses delivered at the meeting to commemorate the semi-centennial of the Boston Society of Civil Engineers, which addresses are valuable historically. The other papers in this issue are on the "Nature and History of Patent Rights," by Mr. E. L. Thurston; "Levees,

With Special Reference to the Red River System," by Mr. Frank M. Kerr; "The Civil Engineer as a Guardian of the Public Health," by Prof. J. B. Johnson, and "The Civil Engineer and National Public Works," by Mr. George Y. Wisner.

Lighting by Acetylene. By William E. Gibbs, M. E. Second edition; revised and enlarged. New York: D. Van Nostrand Co. Pages, 161, with 64 illustrations. Price, $1.50.

The first edition of Mr. Gibbs' book was noticed in our issue of July 29 last. The rapid sale of the work called for the second edition, in which the author has taken occasion to correct some errors and to add many new facts, principally relating to the new designs of generating apparatus that have been brought out since the book was written.

New England Roadmasters' Association.—The Proceedings of the Sixteenth Annual Convention of the New England Roadmasters' Association, held in Boston last August, are now issued in pamphlet form. The pamphlet can be obtained by addressing the Secretary, Mr. F. C. Stowell, Boston & Maine R. R., Ware, Mass.

A Catalogue of a Railroad Library.—The 1899 catalogue of the Library of the Railroad Men's Building, 361 Madison avenue, New York City, is received. The catalogue contains 8,000 titles. Only a small part of it is given to railroad and engineering literature, but that part is important and is very well arranged.

## TRADE CATALOGUES.

The Thomson Recording Wattmeter.—Ten years ago electrical energy was supplied at a fixed rate, with little regard to the amount actually used. Today electric stations in this country usually supply electricity on a meter basis, resulting in a greater station economy. Some idea of the extent to which the meter business in this country has grown may be obtained from the statement that not less than 200,000 Thomson Recording Wattmeters have been made and sold by the General Electric Co. The General Electric press has just issued a pamphlet entitled "Thomson Recording Wattmeters." It deals with the different types of these recording meters which are made by above company, and tells of their uses and advantages. Each type of meter is clearly described, and is illustrated with such care that the details can readily be understood. Full instructions are given for the care, connection and reading of these meters. The pamphlet will be sent on application to the Schenectady office of the General Electric Co.

Machine Tools.—The Hilles & Jones Co., Wilmington, Del., send us a new catalogue, "P," for 1898 and 1899, being a pamphlet not intended as a general catalogue, but to illustrate a few representative tools. It contains half-tones from photographs and brief descriptions of punches, shears, coping machines, planing machines, and bending and straightening rolls. These are made with and without electric motors and for driving with pulleys or direct connected engines. One double angle-shear for shearing angles of heavy section is shown mounted on a turntable and driven by an electric motor. A horizontal riveter is shown with stake 5 ft. long, the operation controlled by improved automatic stop. The seam or joint is clamped automatically while a rivet is driven from the inside, the upper plunger doing the clamping and the lower, or stake plunger, heading the rivet, the two operations being almost simultaneous. The time required to bolt up work is eliminated and the calking much reduced.

Hydraulic Tools.—The Watson-Stillman Co., 204-210 East Forty-third street, New York City, send catalogue No. 51, showing miscellaneous machinery, being an illustrated index. The scheme is to show each tool by a small drawing and title, with reference by number to the sheet on which it is shown in greater detail. The pamphlet also contains an index of illustrated sheets, and if one is interested in any particular sheets he can write to the company and obtain them. For instance, "accumulators, hydraulic," are shown on sheets 308 to 316, 319 to 322 and 334. The purpose of the house is to issue special group catalogues at frequent intervals. Catalogue 52 will be for street railroad tools and apparatus.

Catalogue No. 19 of the Long & Allstatter Co., Hamilton, O., 6⅛x9 in., contains 124 pages and 111 illustrations of different styles of punching, shearing, bending, forming and riveting machines, together with an index. The catalogue is not intended to be complete or even descriptive in a general way, but merely to furnish illustrations which will enable those interested to get an idea of the various kinds of machines made by this company and how they are built.

Compressed Air Machinery.—The Ingersoll-Sergeant Drill Co., 26 Cortlandt St., New York City, sends a new catalogue, No. 41. This is intended to advertise mining, tunneling and quarrying machinery, including rock drills, quarry bars, gadders, stone channeling machines and air compressors. The catalogue is in itself a handsome pamphlet with fine illustrations, and shows the varied product of this famous concern. A general alphabetical index adds to its convenience.

The Otto Gas Engine Works, Philadelphia, have issued a 7x10-in. catalogue for 1899 containing 29 pages and numerous engravings of gas or gasoline engines. These include vertical, horizontal and portable engines, together with various combinations of gasoline engines with water pumps, air compressors and electric generators. Mr. T. W. Snow, 360 Dearborn St., Chicago, has charge of the railroad business for the company.

The American Steel & Wire Co., Rookery Building, Chicago, has issued a catalogue of 32 pages, 5¼x8 in., illustrating the various styles of woven and barbed wire fencing made by that company for railroads. These include the well known Ellwood, McMullen and American woven wire fences, together with several styles of gates.

Power Jacks.—A. O. Norton, 167 Oliver St., Boston, Mass., sends a new catalogue (1899) of the Norton patent ball-bearing jacks and "sure drop" track jacks. Jacks adapted to a great variety of work are illustrated and briefly described, with weights, prices, etc.

## Is England Being Left in Railroading.

(Continued from page 139.)

smoothness of railway traveling which they have experienced in America to this difference in the laying of its permanent way. "Why," said one, "you can have a tumbler full to the brim of cocktail by your side when traveling at high speed on one of the crack American roads, and not a drop of it will spill. Can you do that in this country? What is there to be said in defence of chairs?"

Another point upon which my two informants, one of whom visits the States every year, proved to be absolutely at one, was as to the superior punctuality of American trains. The gist of their opinions on this point seemed to be that American trains on the crack lines are seldom or never unpunctual, while English trains, even on the best lines, are seldom or never on time. "Have we any train in this country of which it can be said that it has run every day for six months a distance of 55 miles throughout, at a speed of nearly 70 miles an hour, and only been late once, and that by two minutes only, during the whole period? People in this country won't believe me when I tell them that such is the authentic record of an American flyer, but look at this!" And the speaker produced the official record of the famous Atlantic City train of the Philadelphia & Reading Railway, together with a personal letter from the Traffic Superintendent of the line, confirming the statement that the tran had run throughout July, August and September, 1897, and throughout the same months of 1898—it is a summer train only—from Camden (Philadelphia) to Atlantic City, a distance of 55 miles in 50 minutes, arriving at its destination before time on many occasions, on time less frequently, and after time only once. Then, as I have said, it was late by no more than two minutes, the explanation being that the signalling had been disorganized by an electrical storm. "Absolute punctuality is the rule of the best railroading in America," said both my informants. "Over here it is becoming every year a rarer and rarer exception; and the reason is that we have fallen behind in locomotive building, we have fallen behind in signalling, and we have fallen behind in general traffic management." That is the gist of the indictment as it concerns the passenger department.

The need of English railwaymen is combination, association. America has its scores, its hundreds of railway clubs and technical institutes whose primary object is the scientific study of railroading in its multiform technical branches. I do not know where to look in this country for a single club or institution which is definitely devoting itself to the same ends.—Transport.

This is all very promising; but what advance is to be expected among a people who talk about "a tumbler full of cocktail?"

## The Evolution of the Locomotive Engine.

In our issue of December 2 was published an extract from Mr. William P. Marshall's recent paper before the Institution of Civil Engineers, "The Evolution of the Locomotive Engine," which treated of the development of and important changes in English locomotive types. What follows is taken from the same paper and relates to important changes in the details of English locomotives. Those who are especially interested in the early history of locomotives would do well to secure a copy of this paper. The facts are systematically arranged according to dates, so that the paper is valuable for ready reference.

The original idea of making use of the boiler as the foundation upon which the engine is built, survived for a long time. Not until about 1842 was the frame left free at the firebox end to allow for the expansion of the boiler, and it was as late as about 1863 before the saddle-brackets from the frame to the boiler began to be omitted, and the motion-plates left free from the boiler; thus introducing the modern system of erecting the engine complete in the frame entirely independent of the boiler, and afterwards dropping the latter into its place in the frame, with a fixed attachment at the smoke-box end alone.

The locomotive boilers built up to 1830 were riveted, with lap-joints, and were subjected to grooving by corrosion along the longitudinal seams from the bending of the plates at those points each time the boiler was subjected to steam pressure. Butt joints with cover plates were used for the longitudinal seams in 1845 to preserve the circular form of the barrel, and later this construction was improved by using double cover plates, one inside and one outside, and this plan is now in general use. Welded joints, tried about 1860, were subsequently discontinued. The transverse seams continue to be lap-jointed. Mild steel plates for the boiler shell were introduced in England in place of wrought iron in 1875, but had then been used in America for ten years.

Brass tubes were introduced in 1833 in place of copper, and the tubes' ends were secured to the tube plates by a roller-expander in 1866; ferrules were used at the firebox end only. Iron tubes have been used for many years on some lines in England where the water is suitable, and soft steel tubes are now used to some extent. The "Serve" tube, in which a number of longitudinal ribs are added in the inside, was introduced in 1890. The heating surface of boilers has constantly increased, as shown by the following table of leading examples of locomotives:

| | Heating surface. | | | Tubes. | | | Boiler, Diam. | | Cylinders, Diam. | Wheels, Diam. | | Engine weight. | Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total. | Firebox. | Tubes. | No. | Diam. | Length. | | | | | | | |
| | Sq. ft. | Sq. ft. | Sq. ft. | | Inches. | Ft. | Ins. | Ft. | Ins. | Inches. | Ft. | Ins. | Tons. | |
| "Planet," Liverpool and Manchester* | 351 | 33 | 318 | 107 | 1⅝ | 7 | 0 | 3 | 0 | 11 | 5 | 0 | 8 | 1830 |
| Early six-wheeled engine | 459 | 46 | 413 | 124 | 1⅝ | 7 | 10 | 3 | 6 | 12 | 5 | 0 | 12 | 1836 |
| Crewe engines | 709 | 51 | 658 | 158 | 1¾ | 10 | 6 | 3 | 7 | 15 | 6 | 0 | 18 | 1843 |
| "Lady of the Lake," L. N. W. | 1,098 | 85 | 1,013 | 192 | 1⅞ | 10 | 10 | 4 | 0 | 18 | 7 | 7 | 27 | 1858 |
| Caledonian Railway | 1,116 | 86 | 1,080 | 192 | 1⅞ | 11 | 6 | 3 | 11 | 17½ | 8 | 2 | 31 | 1862 |
| Bristol and Exeter (7-ft. gage) | 1,262 | 124 | 1,138 | 180 | 1¾ | 11 | 4 | 4 | 4 | 16½ | 9 | 0 | 45 | 1853 |
| "Bloomer" L. N. W. | 1,294 | 142 | 1,152 | 195 | 2⅛ | 12 | 0 | 4 | 1 | 16 | 7 | 0 | 32 | 1850 |
| Brighton Railway | 1,485 | 112 | 1,373 | 331 | 1½ | 10 | 6 | 4 | 6 | 18¾ | 6 | 6 | 39 | 1883 |
| Great Western Railway | 1,561 | 127 | 1,434 | 265 | 1¾ | 11 | 9 | 4 | 3 | 20 | 7 | 0 | 50 | 1894 |
| Mersey Tunnel, Liverpool | 1,634 | 118 | 1,516 | 199 | 2 | 14 | 7 | 4 | 8 | 21 | 4 | 7 | 68 | 1886 |
| New York and Chicago express | 1,775 | 155 | 1,620 | 258 | 2 | 12 | 0 | 4 | 10 | 19 | 7 | 2 | 55 | 1892 |
| St. Clair Tunnel, Detroit | 2,320 | 170 | 2,150 | 281 | 2¼ | 13 | 6 | 6 | 1 | 22 | 4 | 2 | 87 | 1890 |

*Colburn & Stretton give particulars of "Planet" as follows: Total heating surface, 407.66; firebox, 37.25, and tubes, 370.41 sq ft; number of tubes, 129.

The Northumbrian in 1830, that succeeded the Rocket, was the first engine with the regular locomotive firebox, and this differed from the present firebox only in the matter of the crown bars. Longitudinal crown bars, with bearings on the front and back tube plates, were introduced in 1850, and in 1862, when the fireboxes were increased to 7 ft. in length, transverse crown bars were adopted with numerous sling stays. In 1872 vertical staybolts were used for supporting the crown sheet, in place of crown bars. Up to 1894 all the fireboxes had been constructed upon the same general principle, a fire chamber surrounded by a water casing. In 1894, the Docteur fire brick lined firebox was introduced, in which the water casing was entirely omitted, and the firebox shell lined throughout with brick, the heating surface of the boiler consisting of the tubes only. The tube surface of this boiler was increased sufficiently to make the total heating surface the same as with a firebox of ordinary construction.

Coal was used for fuel in the first locomotives, as they worked on colliery lines; in 1830 coke was made compulsory for the locomotives on the Liverpool & Manchester line to avoid smoke, and this continued to be the universal fuel for many years. The Hall coal-burning engine, 1842, was the first successful attempt at coal burning in locomotives. Combustion chambers in the barrel of the boiler were tried in 1853 and subsequent years, but were finally abandoned as expensive, both in first cost and repairs. The brick arch was first used in 1860.[1] In 188[illegible] liquid fuel was tried by Urquhart on the South Russian railroads, and was brought into regular use. A successful application of liquid fuel was also made in England by Holden on the Great Eastern in 1891.

The steam pressure used in the early locomotives was 50 lbs. per sq. in., which was the pressure used with the Rocket and the succeeding engines. This was gradually increased to 100 lbs. in the next 20 years, and further to 140 lbs. in another 20 years, and now, in an additional 20 years, the pressure has reached 180 and 200 lbs. per sq. in. The Bourdon pressure gage was brought out in 1849, but before pressure gages came into use the only means of obtaining information about the steam pressure in the boiler was by lifting the safety-valve lever to feel how near the pressure was to the blowing-off point.

The exhaust steam was first used in 1827[2] to produce a draught, and in subsequent engines a single exhaust nozzle was used. Various arrangements have

since been tried for varying the intensity of the exhaust, some of which are still in use on continental railroads, but these have been discontinuel in England.

The first locomotive had no frames, the boiler itself answering that purpose, and the axle pedestals were bolted to wrought iron brackets riveted to the boiler. The Rocket in 1829 had a wrought iron bar frame 3½ in. x 1 in., to which the pedestals were bolted, but many engines were built about that time with wood frames plated with iron. The plate frame was introduced by Stephenson in 1841. About 1863 the saddle plates, from the frame to the boiler, began to be dispensed with, and the frame was stayed transversely between the plates independently of the boiler. The brackets in the early engines were looked upon rather as struts to support the boiler, but the experience of the Britannia tubular bridge experiments in 1845 showed that the cylindrical boiler was the stiffest part of the engine. Plate frames of mild steel are now rolled in a single piece for the entire length, but previous to about 1868 the frames had to be made in three lengths and welded together.

In the early locomotives and for many subsequent years it was considered important to keep the center of gravity of the engine as low as practicable for steady and safe running. Opinion has changed, however, and the height of the center of the boiler above the rail level has been increased from 5 ft. 3 in. in the early six-wheel engines to 7 ft. 11 in. in England, and to as much as 8 ft. 11½ in. in America for the purpose of getting in a large boiler and large driving wheels.

The link motion commonly known as the "Stephenson" link was invented in 1841[4] by William Howe, an employee of Messrs. Stephenson & Co., and has been largely used. The screw reversing gear for the link motion was introduced in 1858.

Pumps for feeding the boilers were worked from the cross-head until 1848, but these were open to the objection that the feed pumps could only be worked by running the locomotive. The practice of using a small steam pump to supply water to the boiler when standing became general after 1848. In 1859 the Gifford injector was brought out, and has since replaced all other methods for feeding locomotive boilers.

The Ramsbottom self-acting displacement lubricator was introduced in 1860, by which small quantities of oil were discharged into the cylinders. About 1880 the sight-feed lubricator was brought out, the action being practically the same as the original Ramsbottom, excepting that the displaced drops of oil in passing through a glass tube were visible. Metallic packing came into general use about 1880.

In 1871[5] Mallet, on the Bayonne & Biarritz RR., tried a two-cylinder compound locomotive, which was improved by Von Borries in 1880. Webb, on the London & North Western, in 1881, introduced three-cylinder compounds, while two-cylinder compounds were used by Worsdell on the Great Eastern in 1885. In 1887 a compound locomotive having a combination of the chief features of the Worsdell and improved Von Borries designs was introduced on the North Eastern.

Cast-iron wheels were used with the first locomotives, with the flange cast in one piece with the wheel. After 1821 wrought-iron tires were used, with cast-iron and wood centers; wrought-iron tires were also used with cast iron rims and hubs and wrought iron spokes, while solid wrought-iron centers were used about 1837. About 1851 Krupp began making solid steel tires without welds, and this type has since been universally used. The thickness of tires has been increased from 1 in. and 1½ in. to 3 in., and 4-in. tires are used in America.

Counterweights for the revolving parts were not used until 1842,[6] and did not become general until after 1850.

Locomotive tenders have been increased in capacity from a barrel holding 600 gallons of water to the present style, holding 4,400 gallons. The Ramsbottom track tank was introduced in 1860 on the London & North Western.

Mr. Marshall, in conclusion, says: "In the course of the evolution of the modern locomotive in England a satisfactory point to be noticed is the tendency to simplify its construction. The former complicated construction, of firebox with midfeathers, transverse and longitudinal, has not survived; the complicated coal-burning contrivances of combustion chambers and air jets are replaced by the simple brick arch and deflector; the various arrangements for varying the blast-pipe orifice have generally disappeared; the frame is reduced to a single simple plate on each side of the engine; and the early piston, with its several bolts and packing springs, is reduced to a single casting with a pair of rings and a single nut.

"The following is a memorandum of the successive important steps in the improvement of the locomotive that have come into general or extensive use:"

1813. Smooth driving-wheels .....Hedley.
1827. Blast-pipe .....Hackworth.[3]
1829. Tubular boiler.....Stephenson and Booth.[7]
1841. Plate-frames, cylinders fixed together..Stephenson.
1841. Link motion.....Howe.[4]
1842. Counter balanced driving-wheels. McConnell and Heaton.[8]
1851. Weldless steel tires.....Krupp.
1852. Solid piston.....Ramsbottom.
1856. Duplex direct-acting safety-valve..... "
1859. Injector .....Giffard.
1860. Displacement lubricator.....Ramsbottom.
1860. Pick-up trough..... "
1863. Coupling-rod with solid eyes..... "[9]
1878. Compound engines.....Mallet,[5]

New Proposals.

1878. Central-coupled driving-wheels.....Marié.
1890. Double boiler.....Flaman.
1894. Fire-brick-lined firebox.....Docteur.

Notes by Mr. HERBERT T. WALKER:

[1] Firebrick arch used by Thomas Yarrow on Aberdeen Railway, 1857. The "Lady of the Lake" also had a firebrick arch, year 1858 (see table).

[2] Pressure gage invented by Sydney Smith in 1847, three years before Bourdon's gage came out. See Locomotive Engineering February, 1898, page 88

[3] Richard Trevithick used blast pipe on his first engine, 1803.

[4] Link motion invented by Wm. T. James, of New York, in 1832, and placed on engine for Baltimore & Ohio RR. It was run for some time on the Harlem RR.

[5] First compound engine in America designed by Baxter and run on Worcester & Shrewsbury RR., 1870. Cylinders, 5 × 12 in. and 8 × 12 in. See RR. & Engineering Journal. Vol. LXIV., page 95.

[6] Counterbalance weights invented and used by Thomas Rogers on his first engine "Sandusky," 1837.

[7] Marc Seguin, engineer of the St. Etienne & Lyons Railway, France, built a multitubular boiler for a locomotive in 1827, and it was a practical success on that road.

[8] Solid eyed coupling rods used on "Grasshopper" engines (B. & O. RR). in 1835 Ross Winans also used them on his "Camel" engines, 1852.

## TECHNICAL.

### Manufacturing and Business.

According to press dispatches the Ritter-Conley Mfg. Co. of Pittsburgh, Pa., has secured a contract for building a steel plant for the Pressed Steel Car Co.

It is stated that the Schenectady Locomotive Works will build an addition to their office building, which will be 70 ft. x 40 ft., two stories high.

In the early part of this week the brake beam plant of the Sterlingworth Railway Supply Co. at Easton was partially destroyed by fire. While the loss to one of the building was considerable, the machine shop, riveting department, boilers, engines, air compressors and stock department were left intact, and the company informs us that it expects to be running with full force by the 25th of this month. Orders will be filled with very little delay.

### Nicaragua Canal Company.

At the annual meeting of the stockholders of the Nicaragua Canal Company, Feb. 16, the following directors were elected for the coming year: Captain J. W. Miller, president of the Providence and Stonington Line; Stuyvesant Fish, president of the Illinois Central Railroad Company; R. L. Edwards, president of the Bank of the State of New York; Hermann Oelrichs, of the North German Lloyd Steamship Company; Gordon McDonald, of the Continental Trust Company; John J. Emory, Henry D. Pierce, William F. Cochran, Henry A. Parr, Rudolph Flinsch, John H. Agar, Edwin R. Lancaster and H. Wise Miller.

### Carnegie and Steel Cars.

Poor & Greenough made Saturday this official statement for the several interests involved: "A contract was signed yesterday between the Pressed Steel Car Company and the Carnegie interests whereby the Pressed Steel Car Company agrees to henceforth buy from the Carnegies all the steel it uses. In consideration of this the Carnegie interests agree to withdraw altogether from the building of structural steel cars, leaving this business solely in the hands of the Pressed Steel Car Company for the future."

### The American Car & Foundry Company.

It was announced last week that the American Car & Foundry Co. had added the following concerns to the list already published, namely, the Buffalo Car Mfg. Co., the Niagara Wheel Co., of Buffalo, the Ensign Mfg. Co., and the car plant of Pennock Brothers, at Minerva, O.

### The Locomotive Works of Henschel & Son.

On the 28th day of January, 1899, locomotive No. 5,000 was completed at the works of Henschel & Son, in Cassel. A souvenir of this occasion has been issued by the company, this being a historical sketch of the development of the Works, with illustrations of many of the locomotives and other machines built there and with an appendix giving small plans and cross sections of the buildings. This house is one of the oldest in Germany, having been founded in 1777. It was originally a bell foundry and then took up pumps and various bronze castings. The oldest locomotive shown in the memorial volume, No. 1, is the "Drache," or Dragon, which was built in 1848 for the Hessian, Frederick William-Northern Railroad. This engine has four drivers coupled and a four-wheel truck forward. The cylinders are slightly inclined and overhang the forward carrying axle. Locomotive No. 5,000 is also a four-coupled engine with a four-wheel truck forward, and this one was built for the Prussian State Railroad. Locomotive No. 1 weighed 25,000 kilograms ready for service; locomotive No. 5,000 weighs 45,650 kilograms. Many interesting engines are shown with weights and dimensions, and a running history of the gradual development of locomotive practice at these works is given in the text.

### Electric Power at Richmond, Va.

On Jan. 1, 1898, the Virginia Electric Railway & Development Co. was incorporated, with a capital stock of $1,000,000, to build a hydraulic and electric generating plant near Richmond, Va. The power house, which is now being built, is to contain seven 1,000 k. w. 500-volt three-phase generators, water tube boilers and vertical engines, the contract for which, with the auxiliary machinery, will be let next month. This is a long-distance transmission. The following are the officers of the company: President, Mr. F. Todd; Vice-President, Mr. R. L. Williams; Secretary and Treasurer, Mr. Alexander Weddell; Superintendent, Mr. William Todd; Engineer, Mr. R. S. Shireffs; Electrician, Mr. E. J. Willis. The office of the company is at Richmond, Va.

### New East River Bridge.

On Saturday of last week bids were opened for the towers and approach spans for the New East River bridge. As noted in our issue of Feb. 10, page 105, the specifications are practically identical with those issued a year ago. The following bids were opened last week:

| | |
|---|---|
| Pennsylvania Steel Co. | $1,209,444 |
| New Jersey Steel & Iron Co. | 1,220,230 |
| Benjamin Maurice & Co. | 1,230,000 |
| Phoenix Bridge Co. | 1,315,000 |
| Elmira Bridge Co., Ltd. | 1,374,000 |
| King Bridge Co. | 1,461,000 |

On Monday of this week the contract was awarded to the New Jersey Steel & Iron Co., the contract price being $1,220,230.

## THE SCRAP HEAP.

### Notes.

The Mexican Central has lately engaged 450 Chinese from Hong Kong to work on the track.

The blacksmith shop of the Santa Fe Pacific at Albuquerque, N. M., was destroyed by fire Feb. 17.

Five snow shovelers were killed by an express train on the Philadelphia & Reading at Belle Meade, N. J., on the night of Feb. 14.

The Attorney General of California holds that the State Railroad Commissioners have no authority over the Pullman Palace Car Company.

The fast mail train of the Burlington, which left Chicago for Council Bluffs at 10.47 p. m. Feb. 17, ran through, 502 miles, in 9 hours 14 minutes, equal to 54.4 miles an hour. The best previous record between these two cities was the eastbound trip of the same train on Jan. 2, 9 hours 23 minutes.

The Supreme Court of Kansas has declared legal the acts of the recent special session of the Legislature of that state. This confirms the validity of the law creating a new court to take the place of the State Railroad Commission. Another law passed by that Legislature was one reducing the rates for telegrams and for goods carried by express.

Vice-President St. John, of the Seaboard Air Line, has issued a circular to the employees of the road assuring them that the men who have lately bought a controlling interest in the stock of the company have no intention of dismissing any person employed, so long as his services prove satisfactory and the business requires the performance of the duties which he is now performing.

It is announced that the Attorney General of Texas has withdrawn his suit against the Missouri, Kansas & Texas, to have the company's charter forfeited on the ground that the road has been threatening to consolidate with other companies, that the control of the property has been wrongfully sold to parties outside the state, that stock and bonds have been issued for purposes not authorized by law, etc. The State Railroad Commissioners of Texas have also made a compromise with the railroads, and the suit brought to enjoin the Commissioners from enforcing their tariffs will be withdrawn. It is said that the Commissioners will allow the railroads to make a slight advance in freight tariffs. The cotton rates to Galveston and to Houston will be restored.

"A traveling man," of Anderson, Ind., has invented a mileage ticket which, as described by an enthusiastic reporter, will "beat the band." Whether or not it will prevent "traveling men" from beating railroads is another question, though the inventor is very sure that in this respect his device is nothing less than perfect. The ticket is a book, which does not open. There is a slit through which the mileage strip is drawn out. The passenger, in buying a ticket, signs his name on the last 10 miles and the book is then sealed up. It cannot be broken open without destroying the value of the ticket. It is easy to see that such a book will have no more attractions for a scalper than would a local ticket from New York to Brooklyn. The coupons are not numbered continuously from 1 to 1,000, so a second buyer must take the word of the seller as to its value.

### A Railroad Laboratory.

During the past two years the Atchison, Topeka & Santa Fe has made 1,600 analyses of water and miscellaneous materials at its laboratories at the Topeka shops.

### Seattle Water-Works.

The Supreme Court of the State of Washington has handed down a decision declaring the proposed contract for the Seattle water-works and reservoir recently let to Gahan & Byrne, of Chicago, illegal. The court requires a re-advertisement of the work, and 40 or 50 days will elapse before the new contract can be awarded.

**Twenty-one Passengers Killed in Belgium.**

Press dispatches of Feb. 18 report a rear collision of passenger trains at Foret, near Liege, Belgium, in which 21 persons were killed and over 100 injured. A train from Lille to Tournai, standing at the station, was run into at the rear by a Mons express. The express appears to have been running at high speed and several passenger cars were completely wrecked. There was a dense fog at the time.

**Damage Suits Against Elevated Loop, Chicago.**

The Chicago Office Building Co., representing the Ogden Building, at Lake and Clark Streets, has brought suit for damages against the Union Loop Co., which will be tried before Judge Willis March 1. Several other suits of the same kind have already been brought, and it is said a large number of cases, representing about $2,000,000 damages, are under consideration awaiting the result of the first suit.

**The Riot Damages in Chicago.**

If the decision handed down Friday in the Supreme Court of the state of Illinois stands, the city will have to pay some millions of dollars to the railroad companies for the property destroyed during the riots of 1894. Nearly all the roads that suffered at that time have claims pending and a test case was made of a claim by the Manhattan Cement Company against the city of Chicago for property burned in a car at the stock yards during the strike. The decision was for the plaintiff, but appeal will be taken to the Supreme Court of the United States.

**An Up-to-Date Passenger Department.**

The Atchison, Topeka & Santa Fe will try large gasoline motor coaches to carry sightseers between Flagstaff, Arizona, and the Grand Canon of the Colorado. Several of these horseless coaches will be built for the road by the Everett-King Mfg. Co., Chicago, the first one to be completed in 60 days. If successful these coaches will be used between the points mentioned, where the only travel is in Summer. The distance is 70 miles, and the roads are good, although grades are heavy, being 10 per cent. in some places. It is hoped that the new coaches will make the trip in ten hours or less.

**The Sprague Motor Suspension Case.**

On Jan. 31 last an order was filed in the U. S. Circuit Court, Eastern District of New York, in the case of the Sprague Electric Railway & Motor Co. vs. the Nassau Electric R. R. Co. The Court finds the defendant guilty of contempt of that court in having willfully disobeyed the order entered in the case on June 20, 1898. It is ordered that the Nassau Electric R. R. Co. be fined $25 for cars on which electric motors are combined with the trucks of the cars in any way covered by the Sprague patent No. 324,892. The total amount to be paid to the complainant is $1,825.

**Lake Note.**

The last issue of the Marine Review says that the Bessemer Steamship Co. (Rockefeller line) has ordered four large steel freight boats, two steamers and two tow barges, none of which is to be delivered before April, 1900. One steamer and the two barges will be built by the American Steel Barge Co., of West Superior, and one steamer by F. W. Wheeler of West Bay City, Mich. The steamers will be of 6,250 tons each and 486 ft. long over all. The barges of 7,250 tons each and 466 ft. long. With two other vessels previously ordered for the Bessemer fleet, the aggregate value of these orders for the six vessels is said to be $1,250,000. Including the four just ordered, the number of vessels now building on the lakes is 36, the total valuation being $5,109,000.

**The Pennsylvania Railroad Employees' Relief Department.**

The report of this deparment for the year 1898 has just been issued to the members contributing to the Relief Fund. The membership at the close of the year amounted to 45,141, the net gain during the year being 1,466. About 70 per cent. of the employees are members. The contributions to the fund by the members amounted to $766,232. The companies contributed $50,130 for sick members whose benefits from the Fund ceased at the expiration of the benefit period of 52 weeks. There was paid out for benefits $695,689.

During the thirteen years of the operation of this department the payments from the Fund have been, for disablement by accident and sickness, $3,321,808, and for death, $2,793,861, a total of $6,115,669. In addition to this the companies have paid for operating expenses, deficiencies and other special payments, $1,192,603, and for special relief for sick members, $309,561, a total of $1,502,163. The aggregate of all these payments is $7,617,832.

**Telephones and Electric Wires in Chicago.**

The City Council, on Feb. 15, passed the amended ordinance granting a 30-year franchise to the Illinois Telephone & Telegraph Co. It provides that after 10 years the city shall receive compensation, based on receipts. Within the central part of the city the wires are to run underground, the city having some space in the company's conduits. Outside of the central district the city has the right to use the poles of the company for city wires. At the termination of the franchise the city has the right to buy the plant, the value to be fixed by arbitrators and the value of the franchise not to be considered in the sale. The rate for business telephones is fixed at $85 a year and for residences at $50.

At the same meeting an ordinance was introduced directing the Commissioner of Public Works to report a plan for subways or conduits in the business district for all pipes, wires and other underground work of the city, the plan to include a low-level sewer system, and to provide space for all city water mains and electric conduits free of expense to the city.

**Lake Front Decision, Chicago.**

In the fight for riparian rights at Chicago which began with the building of the Illinois Central, the United States Circuit Court of Appeals at Chicago on Feb. 11 handed down another decision in the case of the people against the Illinois Central to decide the ownership of the lake front property between Twelfth and Sixteenth Streets. Judges Grosscup and Jenkins decide in favor of the railroad company, and in their opinion uphold Judge Showalter's decision of two years ago, confirming the title of the railroad company to the submerged lands on which its piers are built. The court is divided, Judge Woods giving a dissenting opinion. In giving the opinion of the court, Judge Jenkins declares that the duty of the court is limited, by the mandate of the Supreme Court of the United States, to the consideration of the single fact whether the structures in question extend "beyond the point of practical navigability," the case having been referred back by the Supreme Court in 1893 to determine "if the Illinois Central Railroad Co. had exceeded its riparian rights by going beyond the point of practical navigability, having reference to the manner in which commerce in vessels is conducted on the lake." As the present court is divided, it is probable the case will again be taken to the United States Supreme Court, the Supreme Court of Illinois having recently decided in favor of the people, declaring that riparian land does not extend into the submerged property on the lake front. (See "Railroad Gazette," June 24, 1898, p. 464, and Dec. 30, p. 936.)

**Chicago Harbors.**

At a special meeting of the Chicago Real Estate Board on Feb. 8 a resolution was unanimously passed directing that a special committee of seven be appointed to co-operate with the Chicago River Improvement Association and such other bodies as may be appointed in the improvement of the Chicago River. The discussion of the resolution brought out the statement that the closing of the river to traffic would cost the coal and lumber interests alone $1,800,000 a year. It was also stated that the center pier bridges can be changed to the bascule type for $3,000,000; that new docks will be built by private property owners, and that the lowering of the tunnels must be negotiated with the street railroad companies. The following figures showing the change in the river traffic were also presented:

Chicago River.

| | Vessels. | Tonnage. |
|---|---|---|
| 1888 | 10,158 | 3,990,921 |
| 1898 | 7,624 | 5,265,559 |

Calumet Harbor.

| | | |
|---|---|---|
| 1888 | 412 | 318,000 |
| 1898 | 15,652 | 2,208,370 |

**Test of Brakes for Electric Cars.**

A test of brakes for electric cars will be made under the direction of the State Railroad Commissioners on the tracks of the Metropolitan Street Railway Co., New York City. It is the intention to begin these tests about the first of May. Information in reference to securing permits for equipping cars and details as to the manner of making the tests will be given later. Mr. C. R. Barnes of Albany is the electric expert of the commission.

**Technical Schools.**

Stevens Institute of Technology.—Nearly 200 graduates attended the midwinter meeting of the Alumni Association of Stevens' Institute, held Feb. 15, at the Stevens School, Hoboken, N. J. President R. M. Dixon presided. Dr. Morton spoke of the Alumni Building Fund, stating that it amounted to about $20,000. In addition to this was about $20,000 of stocks, set aside for the fund by President Morton. It is hoped that arrangements can soon be made for an early start on the work. Professor Jacobus followed President Morton and explained a proposed plan for a building to be used jointly by the chemical, physical and engineering departments. The feature of the evening was an address by Mr. Alexander Dow, who served with the Volunteer Engineering Corps in the Porto Rico campaign. In Mr. Dow's interesting address he spoke very highly of the personnel of the volunteer engineers in the army. At the close of his account a number of views were thrown on the screen, giving a good idea of the campaign life of the men. Prof. William S. Aldrich, of the West Virginia University, was prevented by the storm from being present and giving an account of the volunteer engineers in the navy. He will, however, in the next issue of the Stevens' Institute Indicator, give the substance of what he had arranged to present at the meeting.

## LOCOMOTIVE BUILDING.

The Lake Erie & Western has ordered five locomotives from the Brooks Locomotive Works.

The Harriman & Northeastern has ordered one locomotive from the Pittsburgh Locomotive & Car Works.

It is rumored, but not confirmed, that the Great Northern will soon be in the market for about 50 new locomotives.

The order for 30 locomotives for the Wabash, referred to last week, will call for passenger, freight and switching engines.

The Lackawanna Iron & Steel Co. has contracted with the Baldwin Locomotive Works for one four-wheel switching engine.

The 25 locomotives for the St. Louis, Peoria & Northern mentioned in our issue of last week have been let to the Brooks Locomotive Works.

The bids on the 40 locomotives for the Illinois Central, mentioned in our last issue, will be opened about Feb. 25 and contracts will be let soon after.

The Grand Trunk will build six passenger and six mogul freight engines at its shops. The passenger engines will weigh 166,000 lbs., and have 72 in. driving wheels.

The Richmond Locomotive & Machine Works have received an order to build 20 compound locomotives for the Sweden State Railways. Ten will be 10-wheelers, to weigh about 120,000 lbs., and 10 six-coupled tank engines, to weigh about 70,000 lbs., in working order.

The Baldwin Locomotive Works have received an order to build 71 locomotives for the Chinese Eastern, a part of the Trans-Siberian Railroad. This order was placed by the Board of Directors of the Chinese Eastern at St. Petersburg, with the approval of the Russian Government. The locomotives are all to be Vauclain compounds and exact duplicates of the 50 consolidation engines built by the Baldwin Locomotive Works for the same road last year and illustrated in the Railroad Gazette Aug. 26, 1898, page 609. The contract provides that 40 of the locomotives are to be shipped during the coming summer and the remaining 31 in season to reach Vladivostok by the opening of navigation next year.

## CAR BUILDING.

It is reported that the Great Northern will buy 1,000 cars.

The Wheeling & Lake Erie is figuring on buying 500 coal cars.

The Norfolk & Western is considering building 500 gondola cars at its own shops.

The Grand Trunk will build at its Point St. Charles shops 500 box cars of 60,000 lbs. capacity.

The Duluth, Missabe & Northern has ordered 200 ore cars from the Terre Haute Car & Mfg. Co.

The Colorado & Southern has placed an order with Pullman's Palace Car Co. for three passenger cars.

The Interoceanic of Mexico has placed an order with the St. Charles Car Co. for building 50 freight cars.

The Mississippi River & Bonne Terre has ordered three cars for passenger service from the St. Charles Car Co.

The Chihuahua Mineral, a new railroad, is negotiating for rolling stock. (See Railroad Construction column.)

It is reported that the Wisconsin Central will order about 30 passenger cars. We have no official information.

The Lake Erie & Western has ordered from Haskell & Barker the 1,000 box cars referred to in our issue of Feb. 10.

The Baltimore & Ohio Southwestern has received permission from the Court to buy 15 or 20 more passenger cars.

The Kansas City, Fort Scott & Memphis has ordered 200 gondola cars of 60,000 lbs. capacity from the Illinois Car & Equipment Co. and will shortly order 300 box cars.

It is reported that the Lake Shore & Michigan Southern has ordered 500 gondola cars of 80,000 lbs. capacity from the Michigan-Peninsular Car Co. We have no official information.

It is stated, but not officially, that the Pittsburgh & Lake Erie has placed an order with the Michigan-Peninsular Car Co. for 500 gondola cars of 80,000 lbs. capacity.

The Central of New Jersey was about to let the contract for the 20 passenger cars, previously referred to, as we were going to press. We understand that the contract will be awarded to the Jackson & Sharp Co.

The Goodwin Car. Co. is having built a number of its 80,000 lbs. capacity steel (gravity) center and side dump cars, equipped with hand and air dumping apparatus. They are designed to be used principally in carrying coal, ore and broken stone, and are to be leased to several railroads. They will be equipped with New York Car Wheel Co.'s "Special Machined" 625-lb. wheels; hammered iron M. C. B. axles; McCord journal boxes; Harrison dust guards; Ajax Universal car bearings; King's triplet radius spring side bearings; Sterlingworth brake beams; Corning brake shoes; Gould couplers; New York Air Brakes; French draft and bolster springs and Goodwin special twin spring draft rigging, ball center plates and truck bolsters.

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The Los Angeles Railway Co., Los Angeles, Cal., now being rebuilt, will need 10 combination motor cars.

The Grand Rapids & Kalamazoo Electric Railway, A. D. Prosser, Vice-President, Kalamazoo, Mich., will buy 15 open and 15 closed motor cars and 15 trailer cars.

## BRIDGE BUILDING.

ALEXANDRIA, LA.—See "Louisiana, North & South," in Railroad Construction column.

ALTON, ILL.—According to report, a bridge, estimated to cost $15,000, will be built by the Bluff Line RR.

BIRMINGHAM, O.—C. A. Judson, of Sandusky, O., is preparing plans for a bridge over the Vermillion River. John R. Gallagher, County Auditor, Sandusky, O.

CEDAR RAPIDS, IA.—According to report, the Burlington, Cedar Rapids & Northern has plans prepared for a new bridge near Vinton. (May 20, 1898, p. 365.)

DAVISVILLE, CAL.—According to report, it is proposed to build a steel bridge of two spans, 100 ft. x 20 ft. each, with a capacity of 1,600 lbs. per sq. ft., on concrete cylinder piers, estimated to cost $8,000. W. O. Russell, County Supervisor.

DES MOINES, IA.—A resolution before the City Council for building the proposed bridge across Des Moines River at Sixth Ave. calls for an expenditure of probably $140,000. Plans are under consideration. (Feb. 17, p. 130.)

DETROIT, MICH.—The City Council will consider the advisability of issuing $600,000 in bonds for the proposed bridge to Belle Isle. (Feb. 17, p. 130.)

EAST HAMPTON, MASS.—The N. Y., N. H. & H. RR. has submitted a plan to the selectmen of this place for the proposed new iron bridge which the company desires to build. J. W. Wilson, City Clerk.

EAST MARION, N. Y.—The bridge over Dam Pond Creek has been partly washed away.

EVERETT, PA.—The citizens of Kimmell Township have petitioned for viewers on a site for a new bridge over Scrabbgrass Creek.

FITZROY HARBOR, ONT.—The Town Council will ask tenders for rebuilding the Carp River bridge.

HAMILTON, ONT.—(See Electric Railroad Construction column.)

HANCOCK, N. Y.—An election will be held next week on a proposition to appropriate $6,000 for a new bridge across the East Branch of the Harvard.

JANESVILLE, IA.—A bridge across the Cedar River, to cost $10,000, is said to be under consideration. George Watts, Surveyor of Bremer county, Waverly.

LANSING, MICH.—A bill will soon be introduced by Charles Smith to enable Houghton county to

build a bridge over Sturgeon River, also a bridge over L'Anse River.

LYKENS, PA.—Viewers are asked for a bridge across the Wiconisco Creek, on the North Branch.

MARIETTA, O.—At the April election it will be decided whether $70,000 of bonds shall be issued for the bridge across the Muskingum River. E. Frank Gates, City Engineer. (Feb. 3, p. 90.)

MARION, KAN.—A bill is before the Legislature for a bridge in Lyons county across the Marais des Cygnes River.

M'MILLAN, WASH.—Citizens of this place have petitioned the County Commissioners for the rebuilding of a bridge recently washed away. A new structure is estimated to cost $2,000. Wm. F. Green is Clerk of Pierce County.

MOLINE, ILL.—A petition has been presented to the City Council by the Moline Plow Co. for a bridge and tunnel at Third Ave.

MONTREAL, QUE.—W. G. Reid of Montreal, who is building the Midland Ry. of Nova Scotia, has let a contract to the Dominion Bridge Co. of Lachine, for the steel superstructure of all the bridges on the line between Windsor and Truro, including an exceedingly heavy structure over the Shubenacadie River. The contract embraces about 20 spans. It is probable that the contract for the stone work on the Shubenacadie Bridge will be given early next month.

NARROWS, VA.—According to report, a new bridge will be built across the New River.

NEWTON, KAN.—According to report, plans and estimates have been prepared and are now on file in the office of W. H. Earle, Resident Engineer of the Atchison, Topeka & Santa Fe, for 19 bridges, to be built this year.

NEW YORK, N. Y.—Bridge Commissioner John L. Shea has directed Deputy Commissioner Thomas H. York to have plans prepared for the new bridge to be built over Newtown Creek at Grand Ave., Brooklyn. (Jan. 27, p. 70.)

ORMOND, FLA.—Repairs are to be made to the Ormond bridge.

OTTAWA, ONT.—Louis Vallie, Engineer of the Public Works Department of the Quebec Government, is inspecting the arrangements for building the Alonso Wight bridge on the Gatineau River and the Gillies Bridge at Des Joachims.

PITTSBURGH, PA.—The City Council passed an ordinance, Feb. 14, granting the Monongahela Connecting Ry. the right to build an overhead bridge 14 ft. above grade on Second Ave., near Sylvan Ave., to connect with the Baltimore & Ohio. New bills were introduced in the Council appropriating money to build a bridge over Avondale St., at Hait's Run; also appropriating $3,000 to repair the Mansfield bridge.

PITTSTON, PA.—The Delaware, Lackawanna & Western, according to report, will replace the bridge over the Susquehanna River, at this place, with a new steel structure.

FORT SCOTT, KAN.—The proposition to build a bridge across Mill Creek, about one mile and a half southwest of the present structure, will be submitted to the people; $1,000 has been appropriated for the abutments.

PURCELL, IND. TER.—The Lexington & Purcell Bridge Co., which was incorporated Jan. 27, we are informed, will in all probability work under charters held by the Purcell Bridge & Transfer Co., granted by Congress and the Oklahoma Territory. The plan is to build a bridge across the Canadian River, with 19 ft. roadway, or 18 ft. between the wheel guards. It will span the railroad tracks as well as the river, and the entire length of the structure will be about 3,500 ft. The whole structure will be supported on iron pipe bents, with a span of 24 to 30 ft. Eight inch standard pipe will be used in the quicksand from 24 to 30 ft. down, and extending above the sand about 10 ft. The water never gets very deep here because of the great width of the river opposite Purcell (about 2,750 ft.). The foundation is quicksand, from 37 to 80 ft. to rock. The structure will only carry road vehicles, and perhaps some light weight street car line. The bridge is estimated to cost $15,000. J. W. Hocker is connected with the company. (Feb. 3, p. 90.)

PROVIDENCE, R. I.—Bids will be wanted in March by O. F. Clapp, City Engineer, for the proposed bridge at Mill St., estimated to cost $21,000.

ROCK RAPIDS, KAN.—A bill is before the Legislature authorizing the building of bridges by the Commissioners of Lyon county across the Cottonwood River and the Neosho River.

SAN RAFAEL, CAL.—The Street Committee of the City Council was authorized to build a bridge over Mahon's Creek on C street.

STOCKTON, CAL.—A petition has been received from a number of property owners, asking that the county put in a drawbridge over the San Joaquin River at the point where Brandt's ferry has been in operation. The petition was referred to Superintendent J. A. Shepherd for investigation.

SUISUN CITY, CAL.—The plans and specifications have been approved for a combination bridge on road 146 in Vacaville township. Bids are wanted March 7.

TORRINGTON, CONN.—A bridge is to be built across the Naugatuck River, between Torrington and Harwinton, at an estimated cost of $10,000.

TOLEDO, O.—According to report, two bridges will be built across Swan Creek. W. F. Brown, City Engineer.

TOPEKA, KAN.—A bill has been introduced in the Legislature authorizing Wyandotte county to issue $75,000 bonds for a bridge across the Caw River.

TROY, N. Y.—Senator Douglas has introduced a bill in the Senate authorizing the Albany Ry. Co. to build a toll bridge across the Hudson River from State St., Troy, to the foot of Twenty-second St., Watervliet.

TUSKALOOSA, ALA.—According to report, a bridge is to be built across the Warrior River at Foster's Valley, nine miles south of Tuskaloosa. W. S. Seed, County Treasurer, Tuskaloosa.

VILLA GROVE, ILL.—Bids are wanted by the County Commissioners in Tuscaloosa, March 4, for masonry on a 120-ft. highway bridge. W. E. Price, County Surveyor.

WATERVLIET, N. Y.—Mr. Sage introduced a bill in the Legislature, Feb. 15, providing for a lift bridge over the Erie Canal at Watervliet, and also a steel bridge over the same canal. (Feb. 17, p. 130.)

## MEETINGS AND ANNOUNCEMENTS.

**Dividends.**

Delaware & Hudson.—Quarterly, 1¼ per cent., payable March 1.

Delaware County & Philadelphia Electric.—Four per cent., payable March 1.

Detroit, Grand Rapids & Western.—Preferred, 3 per cent., payable March 1.

Grand Trunk.—First preferred, 3 per cent.

North Pennsylvania.—Preferred, quarterly, 2 per cent., payable Feb. 25.

Third Ave. (N. Y.).—Quarterly, 1¾ per cent., payable Feb. 28.

**Railway and Telegraph Employees' Political League.**

On account of the illness of Hon. Chauncey M. Depew, who was to have addressed a meeting of this League, as mentioned in our last issue, the meeting was postponed from Feb. 18, and another date for it will be fixed later, when Senator Depew is able to be present.

**The Civil Engineers' Club of Cleveland.**

At the regular meeting on Feb. 14, Professor Robert H. Fernald read a paper entitled "Experiments on the Efficiency of Bicycles," describing investigations made at the Case School of Applied Science, and giving certain conclusions arrived at. Comparisons were drawn between chain and chainless bicycles, racing and road wheels, between sprockets of different size, and between tires under different air pressures. Diagrams showing relative efficiency were exhibited. Prof. Fernald stated that the experiments would be continued and others made under road conditions. The duration of cone and ball bearings would be tested, and the effect of vibration on frames, and the efficiency of different grades of tires at different velocities. The subject was discussed by Dr. Langley, Professor Benjamin, Mr. S. T. Dodd and others.

**Engineers' Club of St. Louis.**

The 485th meeting was called to order at 8:20 p. m., Feb. 15. Messrs. Bryan, Laird and Connor were nominated as a member of Board of Managers of the Association of Engineers' Society. Vote was taken by ballot and Mr. Bryan was declared elected to the position.

Mr. M. L. Holman opened the discussion of the evening on the Chicago Drainage Canal, giving a brief description of main features of Chicago's sewerage system, the Chicago River and the canal itself. He also read parts of the law, giving the provisions for the construction and taxation to pay for it.

Mr. R. E. McMath further elaborated the subject, showing the relation of the Desplaines River, the Illinois and Mississippi Canal and the Drainage Canal. He also discussed some of the early attempts of Chicago to gain relief from the sewerage. The effect of the canal in a commercial way was touched upon.

Mr. Holman added some further remarks on the engineering fallacies of the scheme as undertaken. He stated that the original plans had not been followed out and mentioned that the Chicago engineers themselves do not see the way clear to successful fulfillment of the original expectations. Mr. Colby also added a few remarks.

**Central Railway Club.**

The next regular meeting of the club will be held at the Hotel Iroquois, Buffalo, N. Y., on Friday, March 10, 1899, at 10 a. m. Regular meetings of the club will hereafter be held at 10 o'clock in the morning instead of 2 o'clock in the afternoon, unless otherwise ordered by the Executive Committee.

At the meeting of the Executive Committee after the adjournment of the January meeting it was decided that the entertainment to be given for members in connection with the March meeting should consist of a visit to one of the principal theatres in the evening, with a smoker and lunch at the Iroquois after the performance. This is to be at the expense of the club, and the following committee has been appointed to make the arrangements: O. P. Letchworth, chairman; E. Chamberlin, E. C. Neal.

It is expected that the business session at the March meeting will be one of unusual interest and profit. The subjects designated and the committees to report thereon are as follows:

'Freight Car Roofs; What Types Have Shown the Best Results in Service and from an Economical Standpoint." Committee—A. M. Waitt, James Macbeth, John Mackenzie.

"Round House Practice; the Most Efficient Methods for Cleaning and Preparing Locomotives for Return to Service." Committee—George W. West, C. R. Williams, E. D. Bronner.

The president is very desirous that members should continue to interest themselves in topical questions, as their consideration has proved of practical profit. Those who propound these queries are further asked to be prepared by knowledge and experience to debate the various points that may be raised.

## PERSONAL

*(For other personal mention see Elections and Appointments.)*

—Mr. R. H. Johnson, General Manager of the Columbus & Hocking Valley Coal & Iron Co., died from apoplexy at his home in Columbus, O., Feb. 15, aged 55.

—Mr. John H. Callahan, Secretary of the United Traction Company, of Pittsburgh, died at his home in that city last week at the age of 50. Mr. Callahan was at one time Secretary of the Second Avenue Traction Company, which was consolidated with the United Traction Company.

—Mr. W. H. Truesdale, who succeeds Mr. Samuel Sloan on March 1 as President of the Delaware, Lackawanna & Western, was connected with the Chicago, Milwaukee, St. Paul & Omaha, for several years prior to 1883. He was then made Assistant to the President of the Minneapolis & St. Louis, continuing with that road until June 6, 1894, as Vice-President in 1887, and as President in 1894. He was also receiver of the company from January, 1889, to 1894. He then became third Vice-President of the Chicago, Rock Island & Pacific, and in December of the same year was made General Manager of the system, which position he still retains.

## ELECTIONS AND APPOINTMENTS.

Cedar Rapids, Garner & Northwestern.—The following officers have been elected for this company, whose line has recently been completed: President, A. C. Ripley; Vice-President, J. N. Sprole; Secretary, H. H. Bush; Treasurer, H. N. Brockway; Auditor and Traffic Manager, R. L. Whittam, and General Superintendent, E. P. Fox, all of Garner, Ia.

Chicago Great Western.—Lucius Oppenheim has been appointed Division Freight Agent, with headquarters at So. St. Paul, Minn.

Chicago, Indianapolis & Louisville.—Chas. Coller has been appointed Assistant Master Mechanic, with headquarters at Lafayette, Ind. Effective Feb. 1.

Chihuahua Mineral.—The officers of this company referred to in the Construction column are: President, Enrique C. Creel; Vice-President and General Manager, Fred Duclos; Secretary, Max Krakauer; Chief Engineer, John A. McCurdy. The chief office is Chihuahua.

Delaware & Otsego.—At a meeting of the stockholders, held at Kingston, N. Y., Feb. 10, George I. Wilbur and Davis Winne were elected new Directors.

Great Northern.—We are officially informed that the Evansville & Tintah Branch will become a part of the Breckenridge Division. Effective Feb. 19.

Munising.—The offices of Chief Engineer and Superintendent will be consolidated, and R. C. Young will assume the duties of both offices with the title of Superintendent. Effective March 1.

Oregon Short Line.—Frederick V. S. Crosby has been elected Treasurer, to succeed T. K. Cummings, Jr., deceased.

Pacific Coast Co.—H. F. Martin has been appointed Superintendent of Bridges and Buildings.

Santa Ana & Newport.—This road has recently been purchased, and new Directors were elected as follows: President, J. Ross Clark; Vice-President and General Manager, W. H. Holabird; Attorney, Frank W. Burnett; Secretary and Treasurer, A. W. Jones.

Union Pacific.—E. R. Griffin has been appointed General Agent Freight Department, with headquarters at room 16, Union Depot, Denver, Colo., succeeding H. A. Johnson, resigned. Effective Feb. 15.

Waycross Air Line.—The officers of this company, whose property was recently sold, are (see Railroad News column) as follows: President, J. E. Wadley; Vice-President and General Counsel, J. L. Sweet; Secretary, W. B. Albertson.

Wheeling & Lake Erie.—Myron T. Herrick has been appointed President, succeeding A. G. Blair.

## RAILROAD CONSTRUCTION,
### New Incorporations, Surveys, Etc.

ARKANSAS NORTHWESTERN.—Contracts are to be let in March for this line from Hope, Ark., southeast about 24 miles to Stamp. The company will use 45-lb. rails. W. I. Foster of Hope is President. (Feb. 10, p. 107.)

ARKANSAS SOUTHERN.—Contracts have been let, according to report, for this line from Junction City, Ark., south via Ruston, La., to Colfax or Boyce, on the Texas & Pacific. The section to Ruston may be completed by July 1. (May 6, 1898, p. 332.)

BALTIMORE & OHIO SOUTHWESTERN.—District Judge A. C. Thompson has granted the request of the receivers for permission to expend $614,800. This will be used for various supplies and for improvements on different points of the line.

BLACK DIAMOND.—The North Carolina Legislature has passed the bill granting a charter to the Ohio River, Franklin & Tidewater Co., which will build the main line of the Black Diamond across the State of North Carolina. The Legislature has also passed the bill incorporating the Black Diamond main company with a charter duplicating that of the Pennsylvania Co. (Jan. 20, p. 52.) Colonel Albert E. Boone, of Zanesville, O., is the chief promoter. (Official.)

BOSTON & MAINE.—The New Hampshire House has passed a bill authorizing this company to build the Manchester & Midland extension from Manchester southwest about 10 miles to Milford. (Feb. 19, p. 107.)

CANADIAN PACIFIC.—J. A. Gemmill, Barrister, of Ottawa, Canada, will request the railway committee of the Primative Council at its next meeting, that it grant permission to the Crow's Nest Pass line to give the Nelson & Bedlington right of way on that line, from Nelson toward Bedlington, B. C. The Nelson & Bedlington is a line being built by the Kootenay Ry., Navigation Co., from Bonner's Landing, Idaho, north about 50 miles to Kootenay Lake, B. C.

CAROLINA NORTHERN.—This company, which was incorporated in North Carolina Jan. 10, is to build a line from Goldsboro, N. C., southwest through Lumberton to Marion, S. C. Work on the section from Lumberton to Marion, 45 miles, will be begun soon. The central office of the company is the Bourse Building, Philadelphia, Pa. (Jan. 20, p. 52.)

CENTRALIA & EASTERN.—This company is being formed in Washington, with a capital stock of $25,000, to build a line from Centralia, Lewis County, Wash., on the Northern Pacific, to run east up the Salzer Valley. C. S. Gilchrist, Frank McNitt and Geo. E. Birge, of Centralia, and John C. Quimby, of Duluth, Minn., are among those interested.

CENTRAL NEW YORK & WESTERN.—Surveys are reported in progress for widening the gage of

the narrow-gage branch between Bolivar, N. Y., and Olean, 18 miles.

CHATTANOOGA & LOOKOUT MOUNTAIN.—Grading is to be begun about April 1 on the Tennessee & Round Mountain extension, south about 12 miles to Durham, Ga. (Jan. 13, p. 33.)

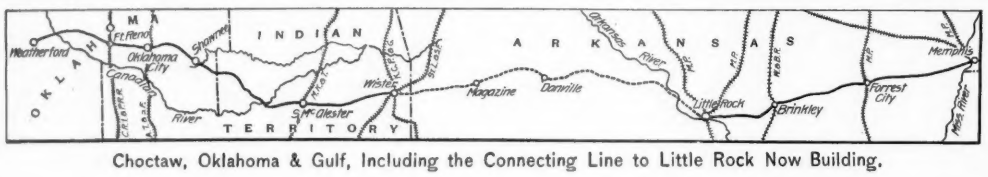
CHICAGO & NORTHWESTERN.—Grading is reported completed as far as Wall Lake from Denison, Ia., northeast toward Algona, 80 miles, and track is laid for about five miles. (Dec. 9, 1898, p. 885.)

CHICAGO, BURLINGTON & QUINCY.—Press dispatches state that this company is to rebuild the Atchison & Nebraska line from Lincoln, Neb., to Atchison, Kan., 145 miles. The cost wil be from $250,000 to $500,000. It is said that about 30 miles of the track will be raised in order to avoid floods on the Missouri River, with four or five new truss bridges at the Nemaha crossing.

CHICAGO, MILWAUKEE & ST. PAUL.—President Miller is quoted as saying that work will be begun on improvements in the early spring, involving reductions of grades on the La Crosse Division, and partially rebuilding the line between Milwaukee & La Crosse. The estimated cost is about $1,000,000, and another $1,000,000 is to be expended during the year to reducing grades and put in permanent iron bridges.

CHIHUAHUA MINERAL.—Under the above title a railroad is to be built under the concession to E. C. Creel and Fred Duclos, of Chihuahua. The main line is from Chihuahua City, Mex., southeast about 30km. (18.6 miles) to Santa Eulalia, with a network of branches connecting with the principal mines of the district of Eulalia. Another branch will run from Tabalaopa Station, on the main line, to the gold district of Nombre de Dios, northeast 15 km. (9.3 miles). The total length of road, including branches, will be between 60 and 70 km. Surveys are made for the main line and contracts let. It will require difficult mountain work, the maximum grades being 4 per cent., and the maximum curve 165 ft. radius. The Colorado Iron & Fuel Co. has taken the contract for the rails, but the contract for rolling stock is still pending. The road will tap the rich district of Santa Eulalia, which in 1897 produced $1,600,000 of gold, silver and other minerals. The Mexican Ore Co., of Chihuahua, of which Fred Ducios is General Manager, is interested in the road. (Mexican Roads, Jan. 6, p. 16.) The officers are given under Elections and Appointments. (Official.)

CHOCTAW, OKLAHOMA & GULF.—It is stated that about 4,000 teams are at work on the extension




Choctaw, Oklahoma & Gulf, Including the Connecting Line to Little Rock Now Building.

from Howe, Ind. Ter., east 164 miles to Little Rock, Ark. The company expects to begin track-laying about April 1, and to have the line completed into Little Rock by Oct. 1. J. H. McCarthy, of Little Rock, and Johnston Bros. & Faught, of St. Elmo, Ill., have the general contracts. (Feb. 3, p. 92.)

COLORADO VALLEY.—The Directors have declared void the contract made with Irving Wheatcroft, and have given a new contract to a St. Louis syndicate, of which J. F. Dougherty and W. F. Wiggins are principal officers. These men have been made President and Vice-President of the railroad company. The road is to be completed under the title of the Colorado, Texas & Mexican. (Feb. 3, p. 92.) The report that the company has closed a contract with the Carnegie Steel Co. for rails is premature, although negotiations are under way. (Jan. 6, p. 15.)

DENISON, BONHAM & NEW ORLEANS.—Senator Chilton and Congressman Bailey, on Feb. 15, introduced bills in the Senate and House granting right of way to this company through the Indian Territory. (Feb. 10, p. 108.)

GAINESVILLE, M'ALESTER & ST. LOUIS.—The Senate, on Feb. 18, passed the House bill granting this company right of way through the Indian Territory. Judge J. M. Lindsley, of Texas, is interested. (Jan. 27, p. 72.)

ILLINOIS CENTRAL.—C. E. Loss & Co., of Chicago, contractors of the Ft. Dodge & Omaha extension, will sublet portions of grading between Tara and Camardon, Ia. (Jan. 13, p. 33.)

KANSAS, OKLAHOMA CENTRAL & SOUTHWESTERN.—The bill granting extension of time for three years, for building this road through the Indian Territory, has been passed by the House and favorably reported by the Senate Committee. (Dec. 30, 1898, p. 938.)

LAKE TAHOE.—The county surveyors have passed resolutions granting this company a franchise along the Truckee and Talive wagon road. Surveys have been completed from Truckee, Cal., south 15 miles to Tahoe City on Lake Tahoe. (Feb. 10, p. 108.)

LITTLE ROCK & GULF.—By mistake last week it was stated that contracts were to be let in March for building this line. The company has only just been incorporated, and so far as known is not yet ready to build. (Feb. 17, p. 131.)

LOUISIANA, NORTH & SOUTH.—A. L. Atkins, Vice-President of the St. Louis Construction Co., Arcadia, La., writes that arrangements are perfected for building a section of this road from Arcadia to a point at or near Alexandria. This is to form a part of the through line contemplated from Ft. Smith, Ark., southeast 560 miles to New Orleans, La. The maximum grade is 1 per cent. There will be no bridges required, except at Alexandria. The company has contracted for 200 miles of rails. There are two propositions, one for money to build 100 miles, and the other, with an English syndicate, to build the entire line. It is probable that the company will have the choice of either. A. L. Atkins is acting President, and N. L. Woods, of Wichita, Kan., Chief Engineer. The company is closely allied with the Monroe Ry. & Construction Co. (Feb. 17, p. 132.)

MISCELLANEOUS COMPANIES.—The Peninsula Construction Co. has been organized at Newport News, Va., with a capital stock of $100,000, to build railroads and other public works. The officers are: President, C. B. Orcott, New York; Vice-President, I. Eugene White, New York; Treasurer, W. A. Post, Newport News; Secretary, J. A. Willett, Newport News.

The Union Construction Co., with a capital of $10,000, has filed articles of incorporation in Wisconsin to build railroads. Among the incorporators are Ed. Friedman, R. A. Gillett and T. C. McElroy, of Milwaukee.

MOBILE RAILWAY TERMINAL.—This company was incorporated in Alabama Feb. 10, with a capital stock of $50,000, to build terminal lines immediately adjacent to Mobile. The incorporators are: W. Butler Duncan, New York; M. H. Smith, Louisville, Ky.; E. L. Russell, Mobile, Ala.; James H. Masson, Mobile, Ala., and G. L. Smith, Mobile, Ala. (Feb. 10, p. 108.)

MOSCOW & EASTERN.—George Creighton, President, and Chas. O. Brown, General Manager, both of Moscow, Id., are in Portland, Ore., making preliminary arrangements for building this line, which is to run from Moscow east about 40 miles to Collins. It is stated that the grading is to be done this coming summer. It will be over an easy grade, not more than 1½ per cent. (Apr. 1, 1898, p. 245.)

NEVADA-CALIFORNIA-OREGON.—Track-laying is reported begun on the extension from Amadee, Cal., west about 20 miles to Susanville. (Feb. 10, p. 108.)

NEW YORK, ONTARIO & WESTERN.—Surveys are reported as completed for a line six or seven miles long, to run from Peckville, Pa., to a colliery in Kayser Valley.

OREGON SHORT LINE.—General Manager Bancroft is reported as saying that an extension is under consideration in Idaho, to run from Idaho Falls, northeast to St. Anthony. It is improbable that building will be begun this year.

ST. LOUIS, MANSFIELD & ALABAMA SOUTHERN.—F. W. Kennon and C. M. Ferguson, both of St. Louis, Mo., are reported at Mansfield, Mo., in consultation with G. W. Freeman, President, and John Wash Singleton, Vice-President, with a view to lifting the indebtedness of the old construction company and organizing a new company with funds sufficient to obtain the right to complete the line as projected, to run from Ava, Mo., north to Mansfield. The Ozark Construction Co., of Springfield, Mo., took the contract in 1897 for building the road. (March 26, 1897, p. 281.)

SAN FRANCISCO & SAN JOAQUIN VALLEY.—The directors have let contracts to Chas. Erickson of Martinez, Cal., for 15 miles of grading, between Pacheco Landing and Anatoc, to be built by next July; and to the Phoenix Bridge Co. for a 1,700-ft. viaduct. (Feb. 10, p. 109.)

SIERRA OF CALIFORNIA.—Another section, 1½ miles long, has been graded on the extension from Jamestown, Cal., northeast toward Sonora, and it is expected that the line will be completed into Sonora by March 1. (Jan. 6, p. 16.)

SIOUX CITY & OMAHA.—The bill giving this company right of way through the Omaha and Winanepago Indian Reservations has passed the Senate. The House reported favorably Jan. 12. (Jan. 20, p. 53.)

VIRGINIA ROADS.—The Younkin Lumber Co., of Narrows, Va., is reported about to build a logging road 10 miles long.

WESTERLY & JEWETT CITY.—Bills have been introduced into both houses of the Connecticut General Assembly amending the charter of this road, which was approved June 28, 1893, so that the act is declared void unless the stock shall have been subscribed for, the company organized and the location of the route filed with the Railroad Commissioners prior to July 1, 1901, and the road completed before July 1, 1903. This company obtained a charter in Rhode Island about 10 years ago for the proposed line from Westerly, R. I., northwest 20 miles, via Voluntown, Conn., to Jewett City. The first survey was made in 1889, at which time H. E. Chamberlain, of Westerly, was chairman of the board. The second survey was made in the following year by Wm. G. Smith, of Waterbury, Conn. (Nov. 1, 1889, p. 724; Dec. 5, 1890, p. 850; Aug. 28, 1891, p. 607.)

WHITMIRES, NEWBURY & AUGUSTA.—This company has been incorporated in South Carolina, to build a railroad from Whitmires, on the Seaboard Air Line, to run south about 75 miles, via Newbury, Salida and Edgefield, S. C., to Augusta, Ga. Jas. McIntosh and Nathan G. Evans are among the incorporators.

WICHITA FALLS & OKLAHOMA.—The charter of this company, recently applied for in Texas, has been granted. The route is from Wichita Falls, Tex., on the Fort Worth & Denver City, to run north to Oklahoma City, Okla. Among the directors are Robert E. Huff and P. P. Langford, both of Wichita Falls. (Jan. 13, p. 34.)

## Electric Railroad Construction.

AKRON, O.—The Akron, Bedford & Cleveland Electric Ry. will be extended north from Cuyahoga Falls to Ravenna, and will not reach Hudson, as at first proposed. (Jan. 27, p. 73.)

ALLENTOWN, PA.—We are informed that the Allentown & Emaus Electric St. Ry., which is operated by the Allentown & Lehigh Valley Traction Co., will build the four-mile extension between Allentown and Emaus, Pa., and that the rails have already been bought. The officers are F. J. Crilly, President; W. J. Saeger, Secretary; John L. Schwartz, Treasurer; Hugh E. Crilly, Superintendent and Purchasing Agent. (Feb. 17, p. 132.)

AMESBURY, MASS.—The Amesbury & Hampton St. Ry. Co. is now reported organized, with a capital stock of $40,000, to build 4½ miles of street railroad between Amesbury and Salisbury, the incorporators being Wallace D. Lovell, 143 Federal St., Boston, and Edward R. Briggs of Amesbury. (Oct. 28, 1898, p. 787.)

BALTIMORE, MD.—The ordinances permitting the extension of the Baltimore & Northern Electric Ry. have been signed by Mayor Malster. The company is required to widen several avenues and streets on which the tracks are to be laid. (Jan. 20, p. 54.)

BAY CITY, MICH.—According to report, the Bay City Consolidated Ry. has in contemplation an extension from Bay City which will cross the Belinda St. bridge. S. L. Nelson is General Manager.

BELFAST, ME.—Jas. Mitchell, a railroad contractor and promoter who was recently reported interested in an electric railroad to be built in the vicinity of Belfast, is associated with W. S. Mitchell, both of Portland, Me. This road is to connect Belfast and Northport, and is proposed to connect with the Waldo St. Ry. Co. in Belfast. If right of way and charter are secured soon, work is to be finished Sept. 1. (Jan. 13, p. 34.)

BROCKTON, MASS.—The Brockton, Bridgewater & Taunton St. Ry. Co., which was organized to build an electric railroad from Brockton to Bridgewater via Taunton, is now stated to be contemplating an extension from Raynham town line, to connect with another railroad in West Bridgewater. T. Ellerby of Bridgewater is Chief Engineer.

CANTON, CONN.—A bill is before the State Senate for the incorporation of the Canton, New Hartford & Northwestern Tramway Co., with a capital stock of $50,000, to build an electric railroad from Farmington and Avon northeast to Cherry Park, via Canton, Collinsville, New Hartford, Burrville and Pleasant Valley to Riverton. John A. Crilly and A. H. Merrill of Hartford and H. R. Cross of Avon are some of the incorporators.

CHARLESTON, W. VA.—The Charleston Ry. Co., according to report, has secured a charter for a street railroad in Charleston. The capital stock of this company is reported at $100,000, and the incorporators are J. E. Scraggs and F. W. Sweet.

CHICAGO, ILL.—The City Council on Feb. 15 granted the Chicago City Ry. Co. a franchise for a trolley line in Lake Ave., from 47th to 57th St. Amendments were adopted providing that the company shall pave the street from curb to curb with asphalt and that grooved rails be used.

A permit has been issued to the Lake St. Elevated Co. to lower its tracks at West 48th St. from 20 to 14 ft. This is done to permit of an extension from Cicero. Work was begun Feb. 16. (Jan. 20, p. 54.)

CHIHUAHUA, MEXICO.—A concession for building an electric street railroad in Chihuahua has been granted to Federico Sisniega, Julio Meyer and Salvador Arellano. This concession is practically for rebuilding the present street lines.

CLEVELAND, O.—The extension which the Lorain & Cleveland Ry. proposes to build to North Amherst is seven miles long. Work will be begun as soon as the weather permits. W. E. Davis, Superintendent.

The company which will build the extension of the Cleveland & Chagrin Falls Electric RR., from its present terminus in Chagrin Falls east to Warren, is the Chagrin Falls & Eastern Electric RR. All the franchises have been secured for this extension and it is proposed to begin work in time to have cars in operation to Burton by May 1. The preliminary estimate of the cost of building, including cars, is $300,000. R. L. Palmer is General Manager of the Cleveland & Chagrin Falls. (Dec. 16, 1898, p. 904.)

DAYTON, O.—The Westinghouse Electric & Manufacturing Co. has the contract for supplying the dynamos, motors and all electrical apparatus for the Dayton & Xenia Traction Co. Other contracts are let as follows: American Electric Works of New York, copper; the New Castle Bridge Co., bridges; the Chase Construction Co., Detroit, Mich., and the Craighead Engineering Co., Cincinnati, O., poles, overhead work, bonding and tracks; the Carnegie Steel Co. began on Feb. 1 the delivery of the rails for which it has a part of the contract, the other part being held by the Johnson Steel Co. (Jan. 20. p. 54; Feb. 17. p. 133.)

DETROIT, MICH.—The deal by which the Rapid Ry. acquires the Detroit & River St. Clair RR., was closed Feb. 9. It is expected to have the lines finished in time to have the cars running between Mount Clemens and Marine City by June 1. The line from Mount Clemens will run through New Baltimore, Anchorville, Fair Haven, Pearl Beach, Algonac and Roberts' Landing, to Marine City. (Dec. 30, 1898, p. 940.)

EAST LIVERPOOL, O.—Surveys are being made for the electric line proposed by J. L. Francis of East Liverpool, Timothy Dwight of Chicago, and J. G. Foltz of Herkimer, N. Y. This road will probably be 20 miles long and will be built via Lisbon. (Dec. 2, 1898, p. 868.)

EASTON, PA.—The Slate Belt Electric St. Ry. Co. was chartered Feb. 14 to build a line six miles in length, connecting the Boroughs of Wind Gap, Pen Argyl and Bangor, Northampton County. The capital is $36,000. The directors are: Thomas A. H. Hay, president; William O. Hay, Edward J. Fox and N. D. Chase, Easton, and Charles A. Richardson, Worcester. Mass.

EAST ST. LOUIS, ILL.—The machinery for the St. Louis, Belleville & Suburban RR. is nearly all in position and the road is completed and will soon be in operation. (March 18, 1898, p. 209.)

EVANSVILLE, IND.—Mr. W. C. Henning informs us that the prospects are very promising for building the 24 miles of electric railroad which he is interested in, between Evansville and New Harmony, Ind. This road will also traverse Kasson, Parkersettlement, Blairsville and Wadesville. The company is to be known as the Evansville & Southern RR. Co., and will have a capital stock of $100,000. Papers for incor-

poration have not as yet been filed. Mr. Henning's address is Room 67, Callahan Bank Building, Dayton, O. (Jan. 27, p. 74.)

FLORENCE, COL.—Mr. Thomas Robinson of the Western Transportation, Power & Improvement Co., informs us that preliminary surveys are being made and ordinances prepared to be submitted at once for franchises for the electric railroad which the company he is interested in proposes to build in the upper Arkansaw Valley, connecting the towns of Florence, Canyon City and several adjacent coal mines. As soon as the preliminary work is done, surveys will be made for the entire route and estimates prepared. He states that he expects to have this accomplished by April 1.

FORT WAYNE, IND.—The Fort Wayne Consolidated Ry. has submitted a proposition to the city for a double-track extension on Broadway, Calhoun and Columbia Sts. A. L. Scott is General Manager.

FRESNO, CAL.—S. N. Griffith, promoter of the street railroad project in Fresno, has made application for a franchise. The road will also be built into the suburbs. (Feb. 10, p. 109.)

GALES CREEK, ORE.—John Heisler of Gales Creek has made application for a charter to build an electric line from Gales Creek, 25 miles to Portland, via Forest Grove.

GREENVILLE, S. C.—According to report, Thackston, Furman & Co. and others who are associated with them have been granted a 60 days' option upon building an electric railroad in Greenville and vicinity. This company now owns a city, and also a state franchise.

HAMILTON, O.—The franchise which the Hamilton & Eaton Electric Ry. Co. has secured is for 25 years and permits the company to operate over the Hamilton, Rossville, Somerville, Newcomb & Eastern Turnpike. The road is to be completed and in operation 18 months after the signing of the franchise. The company has filed a bond for $15,000. C. F. Elliott is interested. (Feb. 17, p. 133.)

The Hamilton, Grimsby & Beamsville Ry. Co. has been asked to extend the line to Vineland, five miles from Beamsville. If this extension is built it will probably be extended to St. Catharines. This will necessitate the building of several bridges. A. J. Nelles is Secretary and General Manager. (Dec. 2, 1898, p. 869.)

HARTFORD, CONN.—F. C. Dunham, General Agent of the Hartford & Springfield Ry. Co., according to report, is about to make application for the extension of the charter which will expire in May. Rails have been bought for the entire line, and the road will probably be built as soon as the frost is out of the ground. (Dept. 10, 1898, p. 679.) Geo. M. Dunham, 52 Broadway, New York, is owner of this railroad.

HUNTINGTON, W. VA.—The Huntington Connecting Ry., with a capital stock of $50,000, has been incorporated, to build a local system of electric railroads. E. E. Canda of New York, Ely Ensign and W. H. Banks of Huntington, are reported as the incorporators.

INDIANAPOLIS, IND.—Mr. A. S. Lockard, 206 South Meridian St., Indianapolis, with others, is interested in a project to build a railroad to one of the suburbs.

Congressman Chas. R. Henry, General Manager of the Union Traction Co., Anderson, has applied to the County Commissioners for the right to build an electric railroad along the Pendleton Pike to connect with the proposed line through Pendleton, Ingalls and Fortville, and eventually to reach Anderson, and to become a part of his road running between Anderson and Marion.

Another petition to connect Martinsville with Indianapolis by an electric line was filed with the Commissioners Feb. 11, by P. H. Fitzgerald, Sterling R. Holt, J. C. Tarkington and Joseph T. Elliott, Jr. This company proposes to have its line pass through Maywood, Valley Mills, West Newton, Friendswood and Mooresville. This is the second application made for this right of way.

Arrangements have been completed for the settlement of the street car situation, which has involved the Citizens' Street RR., and the City Ry. Co. for several years. Both companies will be consolidated. A syndicate of New York and Philadelphia capitalists, organized by Hugh McGowan of Kansas City, has purchased practically all the stock of these street railroad companies, and the new parties will shortly ask for a franchise for a definite term of years, giving in exchange the franchises of the City Company, and the vested rights of the Citizens' Company. The deal involves about $3,000,000. (Dec. 23, 1898, p. 926.) H. P. Wasson, Dr. Henry Jameson, Harold B. Hibben of Indianapolis, Randall Morgan of Philadelphia and Mr. McGowan are the directors of the new company. This syndicate has now a bill before the Legislatutre which repeals the three-cent fare law, and which provides that one company operating a street railroad might acquire the property of another, covering the plans consolidating these companies.

KALAMAZOO, MICH.—Arthur D. Prosser, Vice-President of the Grand Rapids & Kalamazoo Electric Ry., informs us this company was incorporated Jan. 26. The capital stock is $100,000 and may be increased. The road the company proposes to build will be 73 miles long, from Grand Rapids to Kalamazoo, and from Kalamazoo to Battle Creek, all in Michigan. Surveys are about to be made. Fifteen open and 15 closed motor cars, and 15 trailer cars have been decided upon as being the rolling stock required for the work. No plans have as yet been decided upon for the building or equipment of the power house. The officers are: President, W. H. Hannen; Vice-President, Arthur D. Prosser; Secretary, Chas. W. Taylor; Treasurer, James Gamble; Engineer, R. J. Robb. The Vice-President will act as Purchasing Agent until different arrangements are made. (Feb. 10, p. 110.)

KERN CITY, CAL.—H. F. Williams, a city trustee, on Feb. 11, stated that certain parties were prepared to build an electric road from Kern to Bakersfield, if a franchise could be procured, and would guarantee to commence work within six months and complete it within a year and a half.

LOS ANGELES, CAL.—F. W. Wood, General Manager of the Los Angeles Ry. Co., states that work is in progress for relaying new track and rebuilding the road. Sixty-pound rails are now being placed on the road. Grant Bros., and Cowley & Hannon each have part of the contract. Ten combination motor cars are wanted for the line when it is completed. The officers are H. E. Huntington, President; A. Borel, Vice-President; I. W. Hellman, Treasurer; J. T. Burke, Secretary, and Mr. Wood, General Manager. (Feb. 10, p. 110.)

LOWELL, MASS.—The Selectmen of Tewksbury have been petitioned by C. F. Woodward for the Reading & Lowell Electric RR. Co., for permission to build from Tewksbury Center to connect with the tracks of the Lowell & Suburban St. Ry., and then run to Wilmington.

MANITOWOC, WIS.—According to report, W. A. Walker of Milwaukee and Isaac Craite of Manitowoc have petitioned the City Council for a franchise to build an electric railroad to suburban points.

MEXICO, MEXICO.—The Federal District Ry. is pushing work on establishing the new transportation system in Mexico City. On both lines of the company 85-lb. rails are being substituted, and 15 new motor cars have been ordered of Brill, for the system. The power house has already been completed. (Dec. 30, 1898, p. 939.)

MONTEREY, CAL.—The Monterey & Pacific Grove St. Ry. Co. has made application for use of additional streets.

NAZARETH, PA.—The Bethlehem & Nazareth Passenger Ry. Co., which was chartered Feb. 6, proposes to build a road through Broad and Main streets in Bethlehem, using the tracks of the Bethlehem & South Bethlehem St. Ry., which is operated by the Allentown & Lehigh Valley Traction Co., through New St., northwest to Washington Ave., to Nazareth. (Feb. 10, p. 110.)

Chas. Brodhead of Nazareth is said to be endeavoring to revive a charter granted to him in 1894 for building an electric railroad.

NEW ORLEANS, LA.—A bill has been introduced in the City Council to sell a franchise for an electric railroad to traverse the line of the old "Spanish Fort RR." Councilman Pedersen is the author of the bill.

NIAGARA FALLS, ONT.—The Niagara Falls, Weston Park & Clifton Tramway Co. has submitted to the City Council of Niagara Falls, South, a proposition to change the present four miles of horse car line between Niagara Falls and Niagara Falls South into an electric system. J. N. Mooney, President.

PITTSBURGH, PA.—Plans for building the Wilkinsburg & East Pittsburgh St. Ry. are being prepared by Wilkins & Davison, the engineers of the line. This is a seven-mile extension of the Monongahela St. Ry. (Feb. 13, p. 34.)

PORT ANGELES & EASTERN.—John Leyhman, of Chicago, one of the trustees of this proposed line from Port Angeles, Wash., east about 30 miles to Junction City, in Jefferson County, has made a proposition to the British Columbia Board of Trade at Victoria, B. C., that the city give a cash bonus of $150,000 and maintain a railroad ferry to Port Angeles. Wm. Martell, of Port Angeles, is one of the trustees. (Jan. 20, p. 53.)

PORT HURON, MICH.—According to report, Edgar L. Brannan of Toledo, O., the promoter of the Port Huron, Lexington & Western RR., proposes to have his road connect Port Huron with Lexington and Bay City.

REDLANDS, CAL.—Work of disposing of bonds for the purpose of transforming the Redland St. Ry. into an electric line is progressing. Work will probably be begun early in the spring. (June 12, 1898, p. 445.)

REDWOOD, CAL.—According to report, Claus Spreckels, President of the San Francisco & San Joaquin Valley, is planning to build an electric railroad from Baden.

ROCHESTER, N. Y.—The Rochester Ry. Co. has petitioned the Council for permission to rebuild its North Clinton street line. Double tracks will be substituted on a greater part of the line, and the road will be extended by single track to the city limit.

ST. LOUIS, MO.—Robert McCullock, General Manager of the National Ry., is reported as stating that the new owners are considering plans for changing the Broadway cable line to electricity. (Dec. 30, 1898, p. 940.)

SAGINAW, MICH.—The road which Allan C. Temple of Saginaw, E. S., was recently reported as preparing to build, is now said to have entire right of way surveyed. Proposals will probably be wanted in time to begin building when the frost is out of the ground. Several small bridges were reported necessary for the line. (Feb. 10, p. 110.)

SAN DIEGO, CAL.—The San Diego, Pacific Beach & La Jolla Ry., which proposes to change from steam to electricity, is reported as having recently been purchased by E. S. Babcock and Captain Chas. T. Hinde. The total length of the road is 13.51 miles. Estimates are being made for the material to change the motive power. The San Diego Electric Ry. Co. will furnish the power. (Feb. 17, p. 133.)

SAN FRANCISCO, CAL.—The San Francisco & San Mateo Ry. Co. has filed notice in Redwood City that it is about to make the improvements to the road in that place. Sixty-pound T rails will be used and the grade changed. W. Clayton, Secretary. (Dec. 2, 1898, p. 869.)

SAVANNAH, GA.—Reports state that S. L. Lazaron is interested in the Suburban & West End RR., which now proposes to build an extension. Mr. Lazaron is reported as stating his company has been considering plans for the best means of operating street cars.

SCHENECTADY, N. Y.—The Schenectady St. Ry. has voted to issue $77,000 in bonds for contemplated improvements, to be made this spring. Theodore Stebbins is Vice President and General Manager.

SMITH'S FALLS, ONT.—The Smith's Falls, Rideau & Southern Ry., which was incorporated in the latter part of 1898, has a capital stock of $300,000, of which $75,000 has already been subscribed, and proposes to build about 110 miles of electric railroad between Smith's Falls, Olivers Ferry, Portland, Toledo, Frankville and to other points. The company has secured a franchise from the town of Smith's Falls for 40 years, and will probably build four miles within the city limits, and when this road is well established, will undertake to build extensions of the line in the direction of the Rideau Likes, and will probably tap the Grand Trunk system at a point near Gananoque. The officers are: President, J. M. Clark; Vice-President, M. Ryan; Secretary and Treasurer, R. A. Bennett. (Feb. 3, p. 94.)

TRENTON, N. J.—The Trenton St. Ry. Co. has been granted a franchise through the township of Lawrence for an extension of its lines from Brunswick Ave. in Trenton. (Feb. 10, p. 110.)

UXBRIDGE, MASS.—According to report, the Blanchard Bros. Granite Co. has secured a franchise to build a railroad from its granite quarries to connect with the Consolidated Ry.

WASHINGTON, D. C.—The Senate Committee on the District of Columbia has, with amendments, acted favorably upon the Metropolitan RR. extension bill. (Dec. 16, p. 905.)

WESTBROOK, ME.—R. D. Woodman, with others, has petitioned for a renewal of the charter which is about to expire.

YPSILANTI, MICH.—H. P. Glover and R. W. Hemphill, according to report, have applied for a franchise to build an electric railroad to Saline.

## GENERAL RAILROAD NEWS.

BALTIMORE & OHIO SOUTHWESTERN.—The B. & O. managers have issued a circular with reference to the B. & O. S. W., in which it is estimated that under the reorganization plan the $5,500,000 available for improvements will so increase the efficiency of the system that a saving on the present business can be effected in operating expenses of $340,000 a year. It is further estimated that the contemplated improvements will increase the gross earnings by nearly 12 per cent., with practically no increase in operating expenses. On this basis, the net earnings, under the reorganization, will be $2,750,000. The fixed charges will be $1,760,000, leaving a net surplus of $990,000. This will be sufficient to pay the necessary 4 per cent. on the additional preferred stock authorized under the plan, and over 5 per cent. on the common stock. The net earnings for 1898 were $1,987,511. (Feb. 3, p. 95.)

BROOKLYN ELEVATED.—Justice Marean, in Brooklyn, on Feb. 16, appointed J. Edward Swanstron as referee to take the accounts of Frederick Uhlmann, receiver. He also granted an order relieving the receiver from operating the company, and turning its affairs over to the officers. The receiver will remain in control until the referee's report is passed by the court. This report shows gross receipts during the entire receivership from March 25, 1897, of $3,935,149, and disbursements of $3,699,456. The actual operating expenses during the period were $2,254,400. The Brooklyn Union Elevated was recently incorporated to take over the property of this company. (Jan. 13, p. 35.)

CENTRAL PACIFIC.—Messrs. Speyer & Co., New York, announce that an agreement of settlement has been executed between the railroad company and the United States Government Commission and approved by the President. The agreement provides for the payment in full of the debt of the company, principal and interest, which, Feb. 1, was $58,389,053, on the Central Pacific, and $5,423,652 on the Western Pacific, making a total debit balance on the two roads of $58,812,715. The debt is to be paid in 20 equal half-yearly installments, running with 3 per cent. interest, the first to mature Aug. 1, 1899. The 20 notes given by the company to correspond with these installments, are to be secured by an equal amount of first refunding bonds, to be created under the readjustment plan shortly to be promulgated here and in Europe. This agreement will obviate the necessity of foreclosure, and is made under an act of Congress passed last July. (July 8, 1898, p. 504.)

The syndicate which has been formed to reorganize the company is composed of Speyer & Co., Speyer Bros., London; Teixeira de Mattos Bros., Amsterdam; Laz. Speyer, Ellissen, Frankfort-on-Main and Deutsche Bank, Berlin. The plan is to use $100,000,000 first refunding mortgage 4 per cent. gold bonds, to run not less than 45 years, bearing interest from Aug. 1, 1899. Of this $47,056,000 will be used as collateral, for the 3 per cent. United States Government notes; $51,253,500 in partial exchange for existing bonds, and $1,690,500 to provide cash for the plan of adjustment. The syndicate will also issue $25,000,000 3½ per cent. mortgage gold bonds to run 30 years, of which $13,695,000 will be used to exchange existing bonds, and the balance for cash requirements of the reorganization. There will be issued $20,000,000 4 per cent. cumulative preferred stock, and $67,275,500 common stock.

CHOCTAW, OKLAHOMA & GULF.—The voting trusteeship of the common stock, which will expire July 1, will be renewed for another five years from that date.

CLEVELAND, CANTON & SOUTHERN.—A sale of this property, made at public auction on Feb. 4 to the bondholders, was confirmed by Judge Ricks in the United States Circuit Court at Cleveland, O., Feb. 18, and a new company has been incorporated to take over the road. (Feb. 10, p. 11.)

FALL BROOK.—The New York Central & Hudson River is reported to have bought this line, which runs from Corning, N. Y., to Antrim, Pa., 53 miles, with branches from Blossberg to Fall Brook, Pa., 7.2 miles, and from Lawrenceville, Pa., to Ulysses, 40.5 miles. The company leases the Syracuse, Geneva & Corning, 64.82 miles, and the Pine Creek, 74.8 miles; both of which are controlled by the New York Central.

INDIANA & LAKE MICHIGAN.—The property of this company is to be turned over at midnight, Feb. 28, by Receiver Mallott to the new company, the St. Joseph, South Bend & Southern. (Feb. 10, p. 111.)

JACKSONVILLE, TAMPA & KEY WEST.—Judge Lock, of the United States Circuit Court at Jacksonville, Fla., on Feb. 6 entered a decree of foreclosure of the first mortgage under complaint of the Mercantile Trust Co. The Special Masters, Chas. S. Adams and Dennis Eagan, have advertised a sale of the property to take place at a Circuit Court house at the City of De Land, Fla., April 3, at 12

o'clock noon. Each bidder must deposit $50,000 in cash or certified check, and $300,000 must be paid by the successful bidder before the confirmation of the sale." At the same time and place the property of the Atlantic Coast, St. John's & Indian River Co., which was absorbed by the J., T. & K. W., will be offered both as a separate parcel and jointly with the property of the parent road. The sale does not include the Lake Eustice branch of 29 miles. (May 16, 1898, p. 282.)

KEOKUK & WESTERN.—This company has been absorbed by the Chicago, Burlington & Quincy. The main line extends from Keokuk, Ia., west 147.97 miles, to Van Wert, Ia., of which 5.17 miles from Keokuk to Alexandria, Mo., is trackage right only on the C., B. & Q. The K. & W. also owns the Des Moines & Kansas City, running from Des Moines, Ia., south, via Van Wert to Cainsville, Mo., 112 miles. Bonds have recently been issued for the extension of this latter line southwest 36 miles from Cainsville to Pattonsburg, where connection will be made with the Kansas City & Northern connecting line of the Kansas City, Pittsburgh & Gulf. The main line of the K. & W. parallels a portion of the C., B. & Q., and is tapped also by its Humeston branch.

KINGS COUNTY ELEVATED.—The reorganization committee, of which August Belmont is chairman, gives notice that a majority of the first mortgage bonds of this company and of the Fulton Elevated have been deposited with the Guaranty Trust Co., in accordance with the notice of Jan. 23, and that further deposits will be received without penalty until March 6. (Jan. 27, p. 75.)

MEXICAN CENTRAL.—The Mexican Central Railway Securities Co., Ltd., has been formed to carry out the proposed plan (Dec. 23, 1898, p. 925) of acquiring 4 per cent. consols of the M. C. It is proposed to issue in exchange two classes of securities known as A and B debenture stock. Each share will be for £102, and will bear 4 per cent. interest, payable Jan 15 and July 15, the A stock being a first charge and the B stock a second charge upon the deposited securities. The B stock will be cumulative and payable only when earned by the Securities Co. Holders who desire to deposit their bonds must do so on or before March 1, at the banking house of Messrs. Glyn, Mills, Currie & Co., 67 Lombard St., London, E. C. The following are the company's directors: Sir Henry Oakley, Chairman; Sir Vincent Caillard, H. J. Chinnery, Esq., Laurence Curry, Esq., Robert Fleming, Esq., C. Sligo de Pothonier, Esq. Trustees: Right Hon. Lord Hillingdon, Right Hon. Lord Revelstoke, H. W. Smithers, Esq.

MINNEAPOLIS & ST. LOUIS.—Redmond Kerr & Co., New York, offer $1,000,000 of the new issue of $5,300,000 first mortgage 4 per cent. gold bonds at 93½ and accrued interest. Of this new issue $300,000 will remain in the treasury, and $4,000,000 has been already disposed of. The issue will be used to buy the Minneapolis, New Ulm & Southwestern, and the section of the Wisconsin, Minnesota & Pacific from Moulton, Minn., to Watertown, S. D.; also for extending the line from New Ulm, Minn., south to the Illinois Central in Iowa. The bonds will be secured by a first mortgage upon these newly acquired lines, and upon the proposed extension, in all about 283 miles of road, at about $18,000 per mile. The bonds will be subject to existing liens on the property of the company, amounting to about $10,000,000. (Feb. 17, p. 134.)

ST. LOUIS & OKLAHOMA CITY.—The St. Louis & San Francisco has bought this line, completed last November, as a practical extension of the St. L. & S. F., from Sapulpa, Ind. Ter., west 103.32 miles to Oklahoma City. When the road was building, it was announced that it was to be operated under traffic contract by the S. L. & S. F., which did not guarantee the bonds or assume financial obligation for the new line. To meet the purchase $1,962,000 first mortgage 4 per cent. 50-year gold bonds will be issued at the rate of $19,000 per mile, all of which have been bought by Redmond Kerr & Co. These new bonds are direct obligations of the parent road and a direct first mortgage lien on the purchased line. They will retire a like amount of 5 per cent bonds. Of the new issue of bonds, $538,000 is available for extensions, additions and improvements. (Railroad Construction column, Nov. 18, 1898, p. 829.)

UNION PACIFIC.—The Nebraska Assembly has passed a resolution calling upon Congress to suspend the proposed sale of the Union Pacific lands in Nebraska, and to declare them forfeited, on the ground that the company has failed to comply with the conditions of the grant. (Feb. 10, p. 111.)

UNION PACIFIC CENTRAL BRANCH.—Officials of the Missouri Pacific have authorized the statement that that company has bought the Atchinson, Jewell County & Western, and the Atchison, Colorado & Pacific, both lines being formerly leased by the Central Branch of the Union Pacific. The three roads went into the hands of the receiver on Oct. 13, 1893. The Central Branch was recently taken over by the Missouri Pacific. (Nov. 25, 1898, p. 854.)

The bondholders' committee of the two leased lines, of which Oliver Ames of Boston is chairman, gives notice to the bondholders that an offer has been made for the property which the committee deem it wise to accept, and ask the approval of a majority of the depositing bondholders. A meeting is to be held March 1 at 3 p. m., in the office of the Old Colony Trust Co., Boston, to vote upon the same.

WAYCROSS AIR LINE.—J. S. Bailey & Co., of McDonald's Mill, Ga., confirm the report that the road has been sold, and to the following parties: J. E. Wadley, J. L. Sweet, C. C. Grace, A. Sessoms, W. W. Beach and J. S. Bailey. The officers are given under Elections and Appointments. (Feb. 3, p. 96.)

## Electric Railroad News.

BROOKLYN, N. Y.—At a special meeting of the stockholders of the Brooklyn Rapid Transit Co., Feb. 11, it was voted to increase the capital stock of the company from $20,000,000 to $45,000,000. It has been stated that this increase is for the purpose of acquiring the Kings County Elevated RR., and changing the power of same to electricity. (Jan. 27, p. 76.)

CHICAGO, ILL.—The plan for consolidating the West Chicago St. RR., the North Chicago St. RR. and the feeding lines of these companies has begun to assume shape. The Chicago Consolidated Traction Co. has been organized, with a capital stock of $15,000,000, to unite these outlying branches. (Jan. 13, p. 30.)

DAYTON, O.—The Dayton, Springfield & Urbana Transit Co. has filed a mortgage and trust deed to the Continental Trust Co. for $750,000. This road is now building between Dayton and Springfield, 26 miles, and will probably be in operation by May 1, this year. (Dec. 23, 1898, p. 924.)

DOYLESTOWN, PA.—In a circular offering $150,000 Easton, Palmer & Bethlehem St. Ry. 5 per cent. 20-year first mortgage gold bonds, it is stated that in the first full month of operating, which was December, 1898, the company earned $3,166. In January the earnings were $2,797. The operating expenses were about 55 per cent. of the gross earned. (Feb. 10, p. 111.)

HARVEY, ILL.—The Water & Light Co. has sold the Harvey St. Ry. franchise, roadbed and track equipment to the Chicago Electric Traction Co., which is about building to Harvey. (Chicago, Feb. 10, p. 109.) The Harvey Water & Light Co. is a reorganization of the old Harvey Transit Co., which has been in the hands of the Chicago Title & Trust Co. as receiver for four years. W. J. Cockindale has been managing the property.

HULL, QUE.—We are officially informed that the Hull Electric Co. has bought the Canadian Pacific Ry. line from Hull to Aylmer, which has been for several years leased to the Hull Co. (Feb. 17, p. 134.)

LEXINGTON, KY.—The Lexington Ry. Co. has been incorporated as the consolidation of the Passenger & Belt Line Ry. Co., the Belt Electric Line Co., the Central Electric Co., and the Hercules Ice Co., all of Lexington. The capital stock of the new company is placed at $800,000, and the incorporators are: John T. Shelby, John R. Allen, R. P. Stall, C. H. Stall, J. C. Rogers, W. J. Loughridge and C. J. Bronston. The consolidation exists from Feb. 11. (Jan. 27, p. 76.)

NIAGARA FALLS, N. Y.—Joseph R. Megrue, who was recently made President of the Niagara Falls & Lewiston RR. Co., has been appointed temporary receiver, and Captain John M. Brinker, one of the stockholders, and until recently President of the company, is reported as stating that the company did not make any money last year, and heavy losses from damage suits were responsible for the insolvency of the company. There is a first mortgage on the property of $1,000,000 bearing 5 per cent. interest. The capital stock is $1,400,000. The Knickerbocker Trust Co. is trustee. (Feb. 17, p. 134.)

ORANGE, N. J.—A mortgage for $1,000,000, to secure 5 per cent. bonds, has been given by the Orange & Passaic Valley Ry. to the New Jersey Title & Guaranty Co., of Jersey City. This company was incorporated in 1898 as successor to the Suburban Traction Co. (July 15, 1898, p. 524), which was sold at foreclosure July 6. The O. & P. V. is operated by the North Jersey St. Ry.

PETERSBURG, VA.—The Piedmont Traction Co. and the Virginia Traction Co., owning the street railroad systems of Petersburg, Va., have been bought by John L. Williams & Sons, of Richmond, Va., and Mittendorf, Oliver & Co., of Baltimore. A new company has been formed, with officers as follows: President, Lancaster Williams, of Richmond; other Directors, Francis B. Lassiter, Augustus Wright and Chas. Hall Davis; also Wm. M. Hablerston, of Richmond. (Feb. 17, p. 133.)

PITTSBURGH, PA.—The Union Traction Co., which controls several street railroad companies in Pittsburgh; has been absorbed with the Consolidated Gas Co., the Allegheny County Light Co. and the Chartiers Valley Gas. Co., under the title of the Philadelphia Co., by Alexander Brown & Sons, of Baltimore. The capital stock of the Philadelphia Co. has been increased from $7,500,000 to $21,500,000, and the new company will probably control the illuminating business of Allegheny County. The officers who have been elected for the new company are: President, James H. Reed; Vice-President, James D. Callery; Treasurer, T. Hart Given, and Secretary, J. F. Guffy. A meeting of the new officers was held Feb. 17 to increase the bonded indebtedness by an issue of $6,500,000 5 per cent. gold bonds, to run 50 years.

PORTLAND, MD.—According to report, the Portland RR. Co., which operates about 20 miles of standard gage electric road, and the Portland & Cape Elizabeth Ry. Co., operating 16 miles of standard gage electric railroad, have been consolidated under the title of the Portland RR. Co. T. S. Krutz is the owner of the Cape road. Hon. Chas. F. Libby conducted the negotiations in behalf of the Portland RR.

SANFORD, ME.—The $250,000 30-year 5 per cent. gold bonds of the Sanford & Cape Porpoise RR., an electric railroad operating between Sanford, Alfred, Lyman, Kennebunk and Kennebunkport, Me., with a terminal at Cape Porpoise, are being offered to the public. Ernest N. Goodall, of Sanford Mills, is President; Louis B. Goodall is Vice-President and Treasurer. The State Trust Co., of New York City, is trustee of the mortgage.

TERRE HAUTE, IND.—The Metropolitan Trust Co., of New York, and the Union Trust Co., of Indiana, trustees under the Terre Haute & Electric Ry. mortgage of 1894, have filed a petition in the Supreme Court to have the mortgage foreclosed.

WASHINGTON, D. C.—The Anacostia & Potomac River Ry. Co. has filed a certificate of increase of the capital stock of the road to $2,000,000, to cover the purchase of the Belt line, and also to be used in the general plan of consolidation of the Anacostia, the Belt Ry. and the Capital Traction companies. (Feb. 10, p. 112.)

## TRAFFIC.

### Traffic Notes.

The railroads in the Central Passenger Association have voted to discontinue the issue of half rate tickets to officers of the Army and Navy.

The Flint & Pere Marquette will soon ask for bids for building a large steel car-ferry steamer. The company's large ship Pere Marquette is unable to carry all the freight offering between Ludington and Manitowoc.

On application of the Twin City & Northwestern Merchants' Association, the railroads leading to St. Paul and Minneapolis will give reduced rates for three merchants' excursions to that city.

Merchants of Rockdale, Tex., are hauling groceries by wagon from Taylor, 27 miles, in consequence, it is said, of the high rates on the International & Great Northern.

A press dispatch from Toledo says that the presidents of the roads carrying coal from the Ohio, the Pittsburgh and the West Virginia fields have made pledges, similar to those recently made by the trunk lines, to enforce tariff rates.

The Trunk Line and Central Traffic roads have postponed until March 31 the proposed change in the freight classification, increasing the minimum carload rates. There is strong opposition to the establishment of a 15-ton minimum, and it is said that the Grand Trunk has made large contracts for carrying provisions at the old minimum.

The State Railroad Commissioners of Iowa, acting on a resolution of the Legislature, have investigated the rates for the transportation of coal in that state, and they announce that they shall make no change in such rates. The mines of the state have increased their output during the past four years, and shipments into the state from Illinois are decreasing.

The Interstate Commerce Commissioners and the chief officers of the principal railroads in the Trunk Line territory held another conference at Washington on Feb. 16. It is given out that no road has broken the informal rate agreement made on Jan. 12. It is stated, further, that "the object of the meeting, among other things, was to ascertain the rate conditions which now prevail in what is known as trunk line territory, and the difficulties which have arisen or may arise in the future to interfere with the maintenance of rates. The primary purpose of the Commission in holding these conferences is to promote the observance of the law by the maintenance of tariffs and thereby to prevent the discriminations which result from secret rate cutting and similar practices. It was the unanimous statement of the gentlemen present that the law was better observed at the present time than had been known before in many years. The subject of relative rates on export grain and flour, minimum carload weights, and storage and terminal charges were among those considered."

### Chicago Traffic Matters.

Chicago, Feb. 21, 1899.

After snarling at each other for a month or two, the roads west of Chicago have called off the time war and the so-called racing will soon end. At a meeting of the general managers of the Chicago-Missouri River lines in this city, it was agreed to make 14 hours the minimum passenger train time between here and the Missouri. Therefore, next Sunday will see a return to this schedule by the Rock Island and the Northwestern, and the Burlington will not make its contemplated reductions of time to Omaha and Denver. The present fast mail trains to the west are not affected by the agreement on passenger trains. The general superintendents of all the Chicago-Missouri River roads are now trying to fix up an agreement for a common time for freight trains, or more particularly for the fast freights between this city and the river. This is a big job and it will probably be some time before any definite agreement is reached. It has been suggested that the minimum time for freight trains of any class between the two terminals be 24 hours.

Chicago shippers are still complaining of the discrimination in corn rates in favor of Mississippi River points. The proportional export corn rate from the latter district to New York is 13½ cents, against a 16-cent rate from this city. Everybody knows that this corn carried at 13½ cents all originates west of the Mississippi; but the trouble is that the great army of Chicago shippers are very much perturbed just now over what to them evidently seems a foolish maintainance of tariff rates on the part of the railroads, and they seem to want to make life as much of a burden for the transportation companies as possible; so they are making many unnecessary complaints.

There is considerable feeling among the officers of competing roads over the way the Santa Fe captured the next convention of the National Educational Association for Los Angeles. It seems that this organization has always made the railroads turn over the extra $2, which each member pays when he buys his ticket, to the Association treasury, instead of going to the railroad, as is the case with other big movements of this kind. All of the other Western roads agreed that this year they would refuse to be held up for this $2, even if the convention went to some other territory. The Santa Fe saw a practical monopoly of this big business if the gathering took place at the southern California city, and without conference with any of the other Western lines agreed to give the Association the "plus $2," if Los Angeles were selected. Officers of the other roads feel very bitter against the Santa Fe for what they term a secret agreement and make all kinds of threats. But it will be uphill work to injure this line in Southern California business.

Officers of the Baltimore & Ohio road report a very good business for the "Ordinary" sleepers recently put in service between here and the East. It is the general poinion among passengermen, however, that the attempt to induce patrons of first-class sleepers to change into the tourist cars, or to fill them with people who have never taken a sleeper at any price, will only result in failure.

The National Association of Merchants and Travelers' will give two more big business dinners in this city next month. This time the organization will hear from the freight department of the railroads. The dinners will be on the lines of the one given here in October, at which the evils of ticket scalping were set forth by railroad men. The merchants now want to be educated on the freight rate problem and to this end George R. Blanchard, ex-Commissioner of the Joint Traffic Association, will be the principal speaker at the first banquet, and at the second gathering Chairman Knapp, of the Interstate Commerce Commission, will talk about the freight rates from the standpoint of the Commission.